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The Rubber Association's New Officers

WITH Dunn as president, DeLisser and Rutherford as vice-presidents, Hodgman as treasurer, and Viles as general manager, The Rubber Association begins the New Year with a very capable, experienced and popular executive board. Mr. Dunn's organizing ability and tact, together with his unfaltering fairness, did much for the association in 1921. For the coming year with the growing tendency toward individualism he will be a strong champion of the sort of cooperation that did so much in war, and should do even more in peace. Mr. Hodgman, one of the rubber club pioneers, a tireless worker respected by all, with marked financial ability, is an ideal watch-dog of the treasury. As for Mr. Viles, energetic, alert and ever dependable worker, he will be a potent factor in making 1922 the association's most successful year.

The American custom of relegating vice-presidents to the background fortunately does not obtain in The Rubber Association. Hence, Messrs. DeLisser and Rutherford will have ample scope for their very marked abilities in planning and carrying out the new year's program of progress.

Cottonoid or Caoutchoucoid

IT is reported that Henry Ford is soon to produce automobile bodies made of cottonoid instead of wood and metal. The new substance is said to be a compound of cotton fiber, glue and formaldehyde. The question at once obtrudes itself why use glue and why not rubber? Mr. Ford's whole business is built upon rubber. It made the pneumatic tire possible, and the pneumatic tire made the Ford car. Had it not been for rubber, according to Mr. Ford's own statement, he would have been manufacturing watches instead of flivvers. Far be it from us to say that a fifty-cent Ford watch—and five dollars' worth of watch accessories—might not have been a huge success. That is however beside the mark. He owes a debt to rubber and it is a better, cheaper, cleaner, and stronger binder than any other in existence.

As for glue it is unsanitary, malodorous, almost immoral. Its use on a Ford scale of manufacture entails glue factories, carloads of carrion, acres of air pollution.

Therefore, instead of cottonoid we respectfully suggest rubberoid, or as that name is more or less copyrighted, call it caoutchoucoid.

Back to First Principles

TIME was when there was rubber manufacture without sulphur and with the use of very few compounding ingredients. The goods were practically pure gum, and consisted of native shoes made over clay casts, cements, rubber-surfaced clothing, double-texture clothing, rubber thread for elastic fabrics, laboratory tubing, erasers and a few minor articles. These goods softened and stuck together in hot weather, became stiff and unyielding in cold. They were particularly susceptible to oils, acids, alkalies and had wearing qualities only in proportion to thickness. The shoes, for example, were as comfortable as wooden shoes and were worn simply because there was nothing better available. With the discovery of sulphur vulcanization, except in the case of cements, unvulcanized goods promptly disappeared. Not only that but as compounding advanced and the value of a host of compounding ingredients became apparent, rubber manufacture got even further away from the pure gum unvulcanized products.

The sudden recrudescence of interest in unvulcanized goods, as instanced by the production of smoked sheet soles, slab mats, etc., etc., by the British planters and the suggestion that such goods are likely to supplant products compounded and vulcanized is worth consideration to say the least.

The first point arising concerns the value of pure rubber as compared with compounded rubber. It is a fact known to all rubber manufacturers, and to but few

others, that pure rubber, vulcanized or unvulcanized, is useful only in a few of the minor rubber products. Pure gum brake linings, packing and valves would last but a short time. Tire threads of pure gum would last hardly a hundred miles. Rubber shoes of pure gum would tear and creep. In fact in all of the major lines, the presence of ingredients that give added wear, greater resilience and increased resistance to heat, abrasion, flexion, oils, acids, alkalies, etc., etc., is necessary. This is notably true even were the pure gum vulcanized. If it were not most of the present lines of rubber manufacture would disappear.

Something of course may come from the present excitement, but it is hardly credible that because of it the present centers of manufacture will move even a foot nearer to the source of supply. Supplies of compounding ingredients, fabrics, machinery, and skilled labor, all lacking in rubber planting centers, are sufficient reasons for this. The mountain will never come to Mahomet.

Counterfeiting Rubber Names

IN a manner as prompt as it was just and decisive, that useful bureau, the Federal Trade Commission, has lately taught the parasites of the rubber industry a wholesome respect for well-earned corporate names. Lacking prestige themselves, unscrupulous concerns have sought to market tires and other rubber goods of uncertain merit under names that closely resemble those famous for quality production, even appropriating distinct and essential parts of corporate titles in order to mislead. The commission does not expressly stigmatize such imposition as counterfeiting, but implies that such juggling with noted names and the using of similar labels and containers is downright deceit; and, what is particularly commendable, the commission spares the aggrieved manufacturer "the law's delays" by the issuance of peremptory restraining or disciplinary orders as soon as the facts are presented and verified, leaving the question of liquidated damages to be adjudicated later and deliberately in the proper tribunals.

Making the sledding of counterfeiters harder than ever in their game of marketing rubber and other wares under deceptive markings, the highest court in the land has repeatedly sustained the rulings of the lower courts investing corporate trade names, as well as trade marks, with a value and dignity that may not be treated with impunity. The courts have made it plain that even distortion or misspelling of copied brands, as well as varied style in design or lettering, will not be tolerated, even for a wholly dissimilar product, when the intention is unmistakably to confuse or deceive a purchaser. Nor is it merely the purpose of the courts to safeguard well-earned vested rights, but to accomplish what is quite as important—the prevention of trade confusion and imposture on credulous consumers.

The lesson to be learned from all the test cases is that reputable concerns can best insure against fraud by using their corporate names in the brands on their products, instead of trusting to any general or geographic titles. To outwit those who would poach upon their preserves, rubber manufacturers would do well to correct as soon as possible any oversights of the past by blending into the "buy-words" of their wares even part if not all of their corporate names. Such a course, as the litigation to check those sailing under false colors has shown, will give them a protection as unique as is afforded by their registered trademarks, and enhance greatly the asset value and reinforce security guaranteed by law to such property rights.

An Interesting Prediction

NOT only the tire trade but the whole rubber industry has had its curiosity piqued by the prediction of Frank A. Seiberling that we are on the eve of momentous changes in the manufacture of tires. He declares that in the year 1922 wonders will be performed in improving chemical and mechanical processes and in perfecting plant units. Modes of manufacturing will be better and cheaper, but this does not imply that tires will be sold below present low prices. The development of the tire industry, says Mr. Seiberling, is, despite the marked rise in automobile production, not so likely to be in the direction of numerical output as in quality production. More especially will greater mileage be assured; and more than ever will trade go to the tiremakers who give customers the utmost for their money.

The prophecy of the veteran tiremaker might well inspire those in other branches of the rubber industry to a closer study of their present methods and equipment, with a view to such improvement as will insure the production of not merely more, but better goods than ever. The trade and the public have got far away from the notion of the old-time manufacturer who warned his help not to make articles too good lest they might last too long. The most successful manufacturers have proved that nothing pays better or gives more real satisfaction to all concerned than putting the utmost quality and serviceability into every article produced.

THE ABOLITION OF THE MILEAGE GUARANTEE ON TIRES and the adoption of a standard warranty that covers possible defects in manufacture is a triumph for the right. The Tire Manufacturers' Division of The Rubber Association of America deserves the highest praise of maker, dealer, and user. Not only has it done much for the tire industry, but it has shown the way to rubber manufacturers in all lines to emancipate themselves from the guarantee evil. Mileage, time or service guarantees are unsound and unnecessary. They are all bound to go.

The Rubber Association of America

Twenty-Second Annual Dinner

EIGHT hundred seventy-four members and guests attended the twenty-second annual dinner of The Rubber Association of America, Inc., at the Waldorf-Astoria, New York, N. Y., on the evening of January 9, 1922. The grand ball room was handsomely decorated for the occasion; there was good music, fine singing by the St. Cecile Quartette, and an excellent dinner, followed by a varied program of interesting and entertaining speakers on timely subjects.

Toastmaster
Raymond J. Knoeppel

Dr. John H. Finley

Rev. Dr. S. Parkes Cadman

Hugh Chisholm, M. A.

After the repast, the postprandial exercises were opened by the president, Harry T. Dunn, who proposed a toast to the President of the United States, which was drunk standing in an appropriately temperate fashion while the band played "The Star-Spangled Banner."

President Dunn's Address

In a few well-chosen words of welcome Mr. Dunn expressed the gratitude of the board of officers for the splendid spirit of cooperation which had prevailed throughout the year; praised the splendid attendance and accomplishments of the various divisions and committees as set forth in the general manager's printed report of the association's activities during 1921; and invited every member to visit the association's offices, become familiar with its work, to criticize and to suggest. Said he in part:

I believe we have accomplished something real. Our industry has suffered, as to a greater or lesser extent has all business during the period of depression. Perhaps it has afforded a better reason for cooperation, and I am inclined to believe that because of it we have done better work; we have accomplished more, because of the necessity that has arisen. Our association probably stands for more today as the result of this close cooperation, and I am sure that we are going to accomplish a great deal more in the next year, in the next two years, and in the future, than we had ever hoped.

As a distinct innovation Mr. Dunn concluded his remarks by introducing Raymond J. Knoeppel, president of the New York Rotary Club, as toastmaster, who fittingly introduced the speakers of the evening.

Mr. Knoeppel's Address

Mr. Knoeppel not only brought greetings from Rotarians but a fund of good stories apropos of the situation, and which he knows well how to tell. In more serious vein, he alluded to the wonderful work which The Rubber Association is doing and to the aims of the Rotary Clubs of the United States and Canada, which, he said, have a common purpose with The Rubber Association—that of idealizing the service being rendered to the community and to the Nation. Outlining what Rotarians are trying to do, in order that the ideas of rubber men might synchronize with theirs for the advancement of returning prosperity, he asserted that two ingredients are needed to bring back the great prosperity which belongs to Americans almost as a heritage, and these are work and optimism.

Faith and Boosting Needed

To put the people of America into a frame of mind which will promote work and optimism, the Rotary Clubs are conducting a publicity campaign which Mr. Knoeppel described as follows:

During the months of December, January and February there will be on one hundred thousand billboards of America and Canada, slogans of good cheer. You see them all through the country today—such billboards as "You were willing to fight for your country, now work for it!"

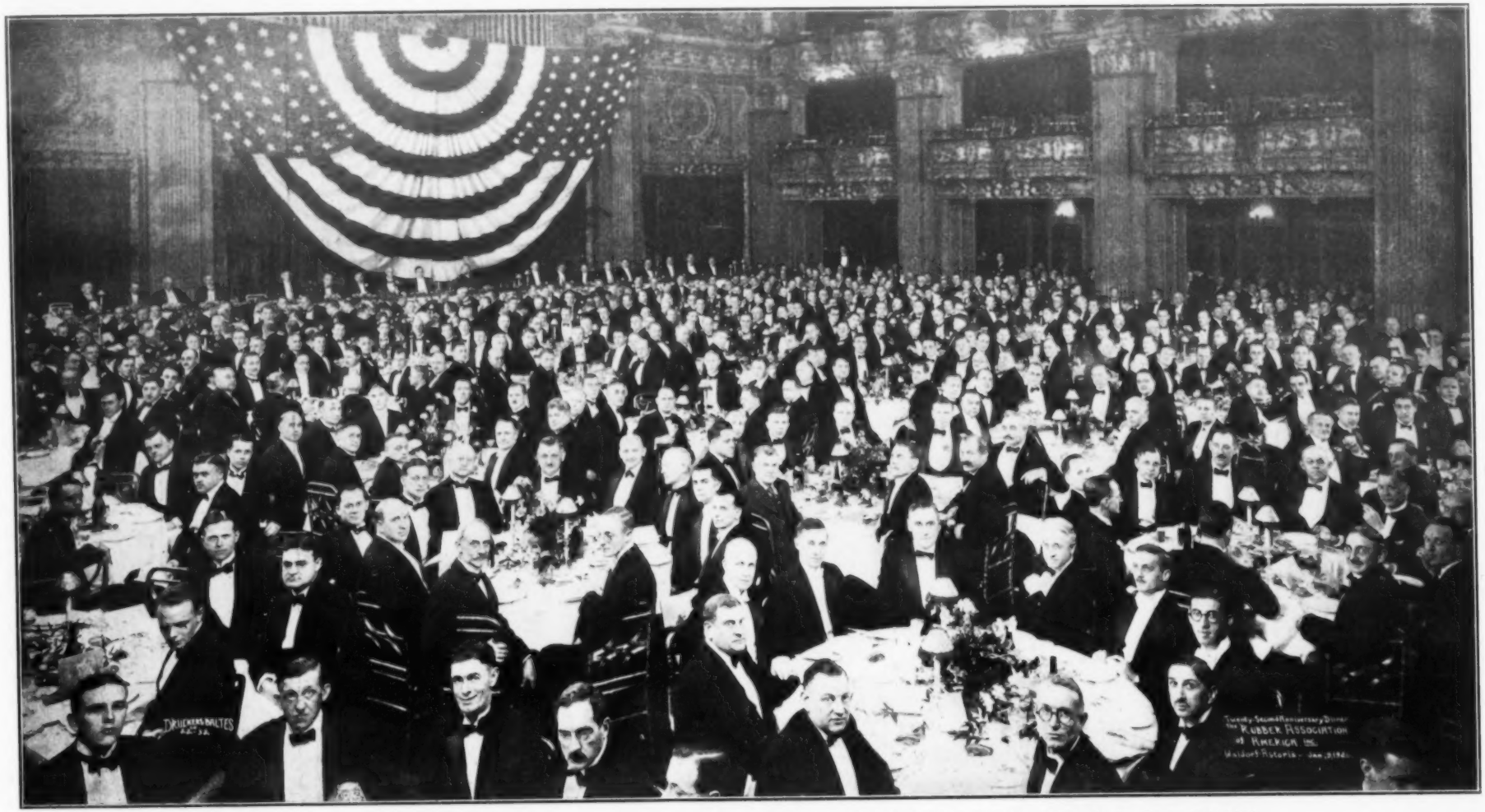
We know of the glorious message from the President of the United States, assuring the people of this great country of his confidence that things would right themselves. Starting next week, for a period of six weeks, through the cooperation of the Presbrey people, in six hundred cities of the United States, whole pages will be seen, devoted to good cheer, optimism and to the thought that people shall work and think in terms of optimism, rather than in terms of pessimism.

I want to say to you boys that one man going around in the attitude of a crêpe-hanger can undo the work of five hundred boosters. This organization of principals is a boosters' organization. You teach your salesmen to go out with a smile on their faces and you will realize that the man who is looking down finds enough men to help push him down on his downward course but the booster is the man who is looking up, and you will find plenty of people to help boost him along. Let us strike a keynote for this evening's banquet of a thought of faith in this great nation of ours; faith in its business, and faith in the business man of America.

Dr. Finley's Address

Dr. John H. Finley, of *The New York Times* editorial staff, and former Commissioner of Education of the State of New York and head of the College of the City of New York, spoke instead of Melville E. Stone, who was unable to attend, and main-

The Rubber Association Banquet



Twenty-Second Annual Dinner of The Rubber Association of America, Inc., at the Waldorf-Astoria, New York, N. Y., January 9, 1922

tained his well-known reputation as a raconteur. His address was in humorous vein throughout, a specially prepared highbrow speech—in places, as he warned his hearers, and never before given to any audience. Stone could not be extracted from rubber, he explained, nor could any satisfactory synthetic substitute for Stone be found which had been made by the Almighty out of the dust of his own original element. Following an exposition of his disinterestedness in the rubber business, he timidly announced his presidency of the World's League of Walkers and launched a discussion of the struggle of primitive life to escape from a state of immobility into one of mobility, and ultimately of automobility, concluding his remarks with a plea to the user of rubber tires not to crowd the user of rubber heels off the highway of life.

Dr. Cadman's Address

Speaking in place of Vice-President Calvin Coolidge, who was unable to be present, the Reverend Dr. S. Parkes Cadman, of the Central Congregational Church, of Brooklyn, New York, voiced an eloquent plea for a higher standard of knowledge and morality in the broader aspects of business, government and international relations. It was also a warning that the progressive civilization, of which the white race has hitherto been the leader, must so adapt itself to the necessities of our age that we shall not have to take a secondary place in the great competitions of human life. Asserting that the white race, without regard to its distinctions as nations, has jeopardized its leadership by what Arthur J. Balfour terms "disreputable conduct," he continued in part:

The Orient no longer regards the white man with the respect, not to say the reverence, he once inspired, and that to my mind, gentlemen, is perhaps the most serious loss incurred by this late war, which has demoralized our hold upon the rest of the inhabitants of the earth to a very considerable degree.

Morals Must Compensate Our Minority Position

It is said that there are five hundred millions of us and seven hundred millions of the Chinese, the Japanese and kindred peoples, and six hundred millions of the Negro race, so that we must compensate for our minority position by the morals we hold, by the intellectual development we can make; and if you flatter yourselves that steam-roller methods will make a way for us very much longer, I am rather afraid, gentlemen, that you may yet be disillusionized.

Therefore, I would like to call your attention in the first instance to the fact that our forms of government, in as far as they are democratic, are upon trial, and that we have to rejuvenate democracy in given directions, if it is to mainain itself and to have sufficient mastery of the arts and policies of just and wise and equitable government to sustain not only our national, but, what is almost more important today,—and you business men know it—your international position.

Intelligence Balanced by Moral Capacity

There always runs collaterally with what you are pleased to call the sovereignty of the people, the necessity for popular intelligence, for what one may call the irreducible minimum of brains, and they have to be balanced by moral capacity, or their fruitage will go into the gulf which has already swallowed up nearly one-half of the white man's product and thirty to forty millions of human lives in the last decade.

American Educational Deficiencies

Now you don't have to be a preacher or to weary people with homilies, to see that that policy cannot be pursued longer, and I ask you also to consider that the basis of education is exactly where you have lived most of your own lives, and that is among the plain people. And when you reflect that eight millions of your American children, in whom I confess a very deep interest, are condemned to utterly outgrown methods of education and that thirty-two and one-half per cent of the teachers in the public school system are unfit to teach, and that we occupy the sixth position among educated nations instead of the first, with seven million illiterates and probably twenty million half-educated people, who are infinitely more dangerous than illiterates, you will see, I think, that we have some ground to make up if we are to maintain the sovereignty of the people in such a way as to earn and deserve the recognition of other nations.

When we remember that education stands directly related to commercial success, to put it upon its lowest grounds, there is additional reason for us to think seriously upon the issue.

England's Loss in the Dye Industry

Great Britain, to her own cost, neglected scientific studies, and Sir William Henry Perkins, the inventor and discoverer of aniline dyes, told me in this very room that in twenty years Germany, by her superior scientific knowledge, took nearly a hundred million dollars' worth of annual trade away from Great Britain, in that single industry.

So that I am still keeping my feet on the earth where we have to live and earn our bread when I tell you that education, diffused generally, the property of the poor boy as well as the privilege of the rich man's son, is the first great desideratum of a republic like ours, which must not have seven million illiterates and must teach twenty million half-educated people what is the real business of citizenship and in what consists the true mastery and purpose of human life.

Educated Nations the Most Dangerous

Then, in the next place, I think you will agree with me that honesty and general morals are so necessary to business and to the rectitude of our life, as peoples, that with them not in existence, we should have to invent them, as has been remarked. And I would like to point out to you that, in this connection, unassisted education is not sufficient. The most dangerous nations today are the educated nations; the most beastly nations are the educated nations. The nations less capable very often of heroism of the real kind and generous treatment of outsiders are nations distinguished for their intellectual cultivation.

If you know so much that your conscience doesn't operate, you are a dangerous man, whether in business, in politics, in social relationship, or in any other position of life, and the most dangerous man in this house now is the man with the keenest brain and the dullest moral sense.

A Higher Type of American Education Needed

Those are the things, gentlemen, that work havoc in society and that cause the great problems which tax to the utmost what statesmanship we possess. I am convinced—and I think you are—that it has become the incumbent and bounden obligation of American citizens to stand for the type of our higher education which is not strictly commercial nor utilitarian, but which gives to us the possibility of producing, even from the plain ranks as from the higher, those men and women of the future who will make the bounds of our freedom wider yet, under law and under justice. This I understand to be the cultivation of that public opinion which lies behind your temporal profits and welfare of your family and the honor of your household; and what is true of us is equally true of 110,000,000 people behind us.

A Broad International Outlook Imperative

Now I do not wish to appear too homiletical, but I am bound to say that we are here to cultivate also the closest possible relationship with men who feel and think as we do throughout the length and breadth of the world.

If you are to have a firm fixture in nationalism, which I thoroughly endorse, you must also have a larger outlook upon the life beyond the nation, and I am convinced that as surely as the family in time gave place to the clan, and the clan to the tribe, and the tribe to the nation, so at the present moment and equally surely we have not reached the boundaries of human development. You have men here who wipe out distance, who are making the world contiguous in a thousand ways, and every act of contiguity breaks down the barriers which hitherto have kept men confined and reserved, and in those positions of prejudice which often breed fatal misunderstanding and ignorant passion.

The Demand for Anglo-American Leadership

Now as these things depart, as conference after conference shall follow the first held in Paris and the second held in Washington, the great demand of this people is for that type of leadership which shall draw to itself not only the neighboring nation of Canada, in whose prosperity and her peaceful relationships with us we greatly rejoice, but all English-speaking men everywhere, every one of them who uses the tongue which I am privileged to use here now, and that they may become the synchronizing point of a new type of civilization which is not baptized in the foul traditions of the past, nor ever seeking to open the door of the future with the blood-crusted key handed down from ages that had not yet escaped from the barbarian.

I am not a pacifist, nor a flesh-worshipper. There are many causes for which it is sweet and proper that a man should

venture everything he is and has, but you and I have come to the point where, if we are to kindle and use the torch at the central blaze, we must be prepared to take on and deliberately practice, even against some hereditary difficulties, these new conceptions which I find everywhere and which women, mark you, of light and leading, and of marked moral and mental development are enthusiastically advocating.

Let Us Hold Up the Light

Let us, therefore, equip ourselves afresh and seek deliberately for the knowledge and that morality which makes the best and greatest of life. You will not live in history because you were a large association; neither will New York nor Chicago be celebrated because they had millions. The greatest cities of the world before us are now so absolutely buried that the most accomplished archeologists are puzzled, to the extent of all they know, to reconstruct them in any degree, whereas little cities like Jerusalem and Athens and Syracuse, of ancient fame, are known to mankind for the light that blazed out of them. That is what we have got to do here, hold up the light, that eternal light which falls upon the pathway of our race, as it struggles upward and onward, till it comes to the altar stairs that slope through darkness up to God.

Mr. Chisholm's Address

Hugh Chisholm, of London, England, editor-in-chief of the "Encyclopædia Britannica," and former financial editor of the London *Times*, voiced the hope of the British rubber planting industry for closer cooperation with American rubber manufacturers in solving problems of mutual interest. Said he in part:

I think that a great deal more could be done here by your association in this particular industry, to get together with the people who are concerned with the same business in my country; and I can tell you with perfect assurance that if you care—as I hope you will care—to take up seriously the question of getting more and more into touch with them, and to cooperate in working out what must be our mutual destinies together, you will find every reciprocity on the other side.

Anglo-American Cooperation Desired

It is not for me tonight to indicate to you any particular direction in which this cooperation can be aimed at and secured. That is for you gentlemen, around a business table, to get into touch with as you can more frankly in private discussion. It is very difficult to indicate these things in a public speech, but I have no doubt whatever, as far as your own industry is concerned, that you will see during the coming year a very big move forward, which people in London engaged in the financing of the rubber industry will take in hand and in which they will seek your cooperation in order to make a further start in the rubber industry.

Underconsumption, Not Overproduction

We are more interested on the other side in the actual production of rubber and you are mainly interested in the manufacturing of rubber, but the two things are bound to go hand in hand. It is an absolute mistake from an economic point of view, as some people ignorantly say, to think that the world is now suffering from overproduction. Overproduction is the last thing this world is suffering from; it is suffering from underconsumption. The figures of your own rubber industry are one of the finest illustrations of the fact that the world is suffering from underconsumption. I haven't the figures before me for the world consumption of rubber during 1921, but as far as I recollect the world consumption of rubber in 1920 was about 365,000 tons, out of which 260,000 was consumed in the United States. Now, that itself shows how the whole world is suffering and the industry is suffering, from underconsumption.

Plenty of Reason for Optimism

It so happens that the rubber industry is a young industry. It had not been going for a decade before the World War started. If it had not been for the World War we should have seen much greater progress in the consumption of rubber and of rubber goods of every kind, and at the present moment with the whole world suffering from absence of purchasing power, the difficulty is to restore consumption anywhere, and to get on. I haven't the slightest doubt that during the coming year, as the financial program is formulated to restore the consuming power of the world, steps will be taken by which production will be increasing again and your industry and mine will be one of the first to benefit by it.

I am an optimist, but I think it is ridiculous to be an absurd optimist; I am a reasoning optimist. There is plenty of reason to be an optimist about the future of the rubber industry, but the exact way in which this will come about I don't know. That will be for the future to determine.

The meeting adjourned with three rousing cheers for president-elect Harry T. Dunn.

MEMBERS AND GUESTS PRESENT

At the President's Table

Bourn, A. O.
Broadwell, E. H.
Broughton, J. S.
Cadman, S. Parkes, D.D.
Carlisle, C. H.
Chisholm, Hugh
Clark, Merrell E.
DeLisser, Horace
Dunn, Harry T.
Feiker, F. M.
Finley, Rev. Dr. John H.
Firestone, H. S.
Gunn, J. N.
Henderson, F. R.
Hodgman, G. B.
Hood, F. C.
Knoeppel, Raymond J.
Lewis, Seneca G.
Lowman, J. S.
Rutherford, W. O.
Thornton, A. D.

Alphabetical List

A

Adams, C. A.
Adams, H. J.
Agar, John L.
Albert, W. H.
Alexander, Albert N.
Allen, A.
Allen, Walter
Andersen, E. A.
Anderson, J. D.
Armacost, W. E.
Armstrong, H. G.
Arnold, F. L.
Arnold, W. H.
Arnold, W. W., Jr.
Arthur, W. C.
Austin, F. G.
Austin, S. Y.
Aydelotte, W. V.

B

Babcock, F. Huntington
Babcock, H. P.
Babcox, Edward S.
Bacon, George C.
Badenhop, Robert
Bailey, I. R.
Baird, C. W.
Baird, R. B.
Baird, R. L.
Baird, W. T.
Baird, W. T., Jr.
Balch, W. H.
Balding, E. W.
Baldwin, J. C.
Ballou, R. H.
Balski, O.
Banbury, F. H.
Barber, L. J.
Bardin, D.
Barnard, O. A.
Barnes, Charles W.
Bartlett, C. R.
Bass, W. H.
Batchelder, F. B.
Bate, J. W.
Bates, George
Batterman, J. J.
Bauman, H. A.
Bayne, William, Jr.
Beal, H. L.
Bechtel, Frederick V.
Bedell, H. H.
Bedford, Bruce
Beecher, L. A.
Behoteguy, W. C.
Behrend, Victor
Bell, W. H.
Benedict, J. R.
Berrien, W. P.
Bers, A.
Bers, E.
Berzen, N. E.
BeSaw, E. W.
Bierer, John M.
Bigelow, Bushnell
Biggart, N.
Birkenstein, Harry
Birkenstein, Louis
Biscaye, G. O.
Bishop, E. A.
Bjerrhus, A.
Blake, C. A.
Blandin, V. C.
Blandon, J. J.
Bloom, Paul
Boehm, W.
Bogardus, E. M.
Bonstedt, Ferd
Booth, C. H.
Borland, J. H.
Bourn, A. O., Jr.
Bouton, P. V. L.
Bowe, R. P.
Bower, C. M.
Bowers, George W.
Bowman, Neal
Bradley, C. E.
Braender, F. L.
Braender, Harry
Braender, W. P.
Braham, John J., Jr.
Brander, L. W.
Brewer, W. G.
Brill, A.
Bromley, Irving
Bronk, W. R.
Brooks, E. H.
Broughton, N. H.
Brown, Alvah H.
Brown, C. A.
Brown, J.
Brown, R.
Bruyn, Frank S.
Bruyn, William E.
Bryant, E. L.
Bullock, Hugh
Burr, A. E.
Butler, W. E.

C

Caldwell, A. E.
Callaway, Cason J.
Caney, A. W.
Carkhuff, S. G.
Carleton, W. S.
Carmichael, Peter
Carter, Raymond
Carter, R. E.
Case, C. C.
Cast, Fred
Cathcart, E. R.
Chalfin, Joseph
Chalmers, G. C.
Chamberlain, K. S.
Chandler, J. J.
Charles, Geo. W.
Ching, C. S.
Chipman, R. L.
Church, Frank
Clark, C. B.
Clark, C. S.
Clark, F. B.
Clark, Seth R.
Clarkson, C. F.
Clawson, Frank T.
Clements, T.
Cobb, J. H.
Cobb, W. H.
Coffee, J. H., Jr.
Coghill, James H.
Conant, R. G.
Conlin, A. J.
Connolly, E. E.
Connor, J. A.
Cook, C. E.
Cook, Charles S.
Cook, G. Arthur
Cook, Horace T.
Cook, Otis R.
Cooke, R. Y.
Cooper, I. J.
Corey, S. C.
Cornell, A. Boyd
Coughlin, E. J.
Courtenay, J. H.
Cowen, R. R.
Crane, R. B.
Cranor, D.
Cranz, J. M.
Craver, B. B.
Cressinger, C. B.
Croeniger, E.
Croft, Ralph
Croselmire, F. A.
Culp, George K.
Cummings, E. O.
Cummings, H. H.
Cummings, W. L.
Cunningham, O. A.
Curry, C. M.
Cyr, F. A.

D

Daggett, H. A.
Daly, Daniel J.
Dammann, Milton
Dane, F. S.
Daniel, F. W.
Darrow, H.
Daum, George W.
Davidson, James
Davis, Poncet
Davol, Charles J.
Dean, T. B.
DeLanie, E. C.
DeLanie, H. S.
Delapierre, H. B.
DeLisser, R. L.
Denman, W. R.
Derry, Herbert A.
Desmond, T. A.
Devine, C. F.
Devore, Weber
Dickerson, W. H.
Dill, C.
Dine, J. M.
D'Louhy, Joseph
Dodd, Seymour L.
Dolan, M. J.
Dorr, R. L.
Doty, H. S.
Dowd, Heman
Dowds, A. W.
Drake, Fillmore A.
Drake, Raymond
Dresser, K. H.
Drisler, W. A.
Dumont, L. W.
Dunbar, F. W.
Dunbar, J. Frank
Dunbar, J. F., Jr.
Duncan, W. W.
Dunne, T.
Dwyer, T. A.

E

Eagles, R. P. M.
Earle, R. W.
Earle, W. P., Jr.
Easley, W. T.
Eason, Franklin C.
Edel, F.
Eden, W. A.
Edson, W. R.
Eis, L.
Elbogen, Paul
Enright, W. F.
Espenhain, F. K.
Evers, Owen J.

Fairbank, L. G.
Falls Rubber Co., party
Farr, E.
Farrell, Franklin, Jr.
Farrington, H. P.
Fearons, G. H.
Feinburg, David
Feinburg, Fred
Feist, J. G.
Fellows, Charles E.
Fenton, F.
Fera, Henry
Field, H. E.
Fillingham, M. P.
Finch, E. S.
Firestone, H. S., Jr.
Fisher, Robert C.
Fisk, H. G.
Fitch, E. H.
FitzGerald, F. B.
Flint, H. A.
Flynn, M. J.
Foley, Frank
Foote, R.
Forney, A. C.
Forsyth, Thomas
Francis, Arnold W.
Frazee, W. C.
French, H. W.
Frey, Henry
Friedman, George
Fulkert, C. L.
Fuller, H. P.
Fuller, Ralph L.
Fulper, E. B.

G

Gallopo, Silvio
Galt, W. H.
Gardner, T. M.
Garretson, C. D.
Garthwaite, A. A.
Gaskill, J. W.
Gassett, W. G.
Gayness, Stuart
Geekie, George
Gerhold, C. H.
Gibbs, G. W.
Gill, Harry R.
Githens, H. A.
Gjessing, A.
Glaenzer, G. B.
Gleason, E. J.
Glidden, A. A.
Goebel, R. H.
Goldman, Herman
Goodwin, Leonard
Goudie, J. Q.
Gould, G. C.
Grant, Charles T.
Grafton, E. H.
Granzen, R. H.
Greenough, Allan B.
Griffith, R. T.
Grosslicht, O.
Grow, George
Grow, Louis
Grow, Samuel
Gudger, Francis A.
Gussenhoven, W.
Gustafson, V.

H

Haartz, John C.
Habich, G. Edward
Haefelein, H. J.
Hager, W. M.
Haigh, H. J.
Haldane, D. D.
Hall, George E.
Hamblen, C. W.
Hamilton, R. S.
Hannay, A. B.
Hanse, J. J.
Hardenbergh, A.
Hardin, C. W.
Hardy, R. S.
Harrah, W. F.
Harrington, John T.
Harrington, Dr.
Harris, R. H.
Harris, S. W.
Harrison, Clark W.
Harrison, M. M.
Hart, C. E.
Hartzell, R.
Hassenzahl, Kennedy
Hathaway, D. C.
Hawkins, L. A.
Haynes, Charles R.
Heitzman, C., Jr.
Helm, H. T.
Heminway, M. L.
Henderson, B. W.
Henderson, H. H.
Henry, Joseph
Herman, E. C.
Herron, J. W.
Hewins, E. D.
Heyworth, L. O.
Hichborn, George F.
Higgins, W. F.
Hill, C. G.
Hill, F. G.
Hillebrand, Joseph J.
Hines, W. D.
Hitchcock, Carl
Hoag, L. H.
Hoblitt, F. M.
Hodgman, G. B., Jr.
Hodgman, S. T.
Hodgman, S. T., Jr.
Holcombe, H. W.
Holmes, J. C.
Hopkins, M. G.
Hopkinson, Ernest
Hoppe, D.
Hopper, C. C.
Houff, H.
Hough, H.
Houk, Henry L.
House, Samuel
Howell, C. J.
Hubbard, H. B.
Hubbard, H. W.
Hunter, P. C.
Hutchinson, G. M.

I

Israel, George

J

Jackson, E. F.
Jackson, L. R.
Jacoby, Ernest
Jahant, C. J.
James, H. L.
Jameson, William
Jamison, C. S.
Jefferds, H. R.
Jeffers, R. H.
Jenkins, H. W.
Jenks, Walter H.
Jessup, C. A.
Johnson, Charles F. H.
Johnson, F. M.
Johnson, J. T.
Johnson, S. H.
Johnson, W. A.
Johnson, Wills
Johnssen, W. L.
Johnston, Frederick A.
Johnston, R. A.
Johnstone, Douglas
Johnstone, J. T.
Jones, A. B.
Jones, Arthur E.
Jones, F. H.
Jury, A. E.

K

Kahnheimer, I. J.
Kaplan, Louis M.
Kaufman, Charles B.
Kavanaugh, William
Kearns, John
Keeler, L. V.
Keller, K.
Kelley, Edward T.
Kelly, J. H.
Kelly, T. J.
Kelly, W. J.
Kenyon, C.
Kenyon, Mr.
Kerr, H. M.
Kershaw, R. R.
Keyes, William
Kimball, T. F.
Kirshhock, F.
Kitchel, A. F.
Kittle, F. L.
Klopsch, Harry
Kniffen, F.
Knoblock, R.
Knoepfel, Charles W.
Knox, E. C.
Kochersperger, E. S.
Koken, Edward
Korn, F. A.
Kubie, David A.
Kuhne, J. W.

L

Lambert, E. P.
Lambert, J. A.
Lamson, F. L.
Lamont, Sloan, Jr.
Lancaster, J. E.
Landers, R. A.
LaSchien, E. E.
Laurie, Irving
Leahy, Frank
Lee, J. W.
Leiser, A. A.
Leisure, B. R.
LePan, L. N.
Lewis, W. T.
Ley, L. H.
L'Hommedieu, P. B.
Lightner, E. A.
Lindsey, H. A.
Lindsey, T. S.
Linerd, J. B.
Linforth, J. N.
Litchfield, P. W.
Little, C. E.
Littlejohn, Lomax, Jr.
Littlejohn, Robert M.
Loasby, A. W.
Loewenthal, R. M.
Long, J. W.
Louis, Joseph
Lovatt, Frank A.
Low, C. H.
Lower, H. C.
Lubke, H. G.
Ludington, G. A.
Lumsden, A. E.
Lyall, W. L.
Lynah, James
Lyon, A. A.
Lyon, F. H.

M

McCauley, W. J.
McClurg, J. S.
McConnell, W. C.
McCullough, G. C.
McDonald, A. D.
McDonald, C. P.
McDonough, A. G.
McGaw, R. B.
McLaren, George W.
McLean, J. F.
McMahon, William
McMaster, E. E.
McMurray, L. L.
MacKusick, H. A.
MacMichael, L. P.
Macomb, J. W.
Maguire, T. A.
Mahoney, P. H.
Manchester, A. A., Jr.
Mann, Alan N.
Marean, B. E.
Marquette, M. A.
Marsh, H.
Marshall, Charles S.
Marshall, T. C.
Martin, H. T.
Martin, Louis
Marvin, J. S.
Mason, H. T.
Mason, J. H.
Mata, Luis
Matchett, Thomas
Mathey, Fred A.
Maurer, Edward
Mayl, J. E.
Mayo, George H.
Mayne, F. F.
Meade, James
Mellinger, B. L.
Metzger, William F.
Meyer, E. T.
Meyer, Otto
Meyerfeld, Paul
Meyers, A. C.
Michelin, I. Hauvette-
Midgley, T.
Miles, D. E.
Millar, Hudson C.
Millenthal, Murray
Miller, C. E.
Miller, Charles P.
Miller, E. F.
Miller, Graeff
Miller, H. C.
Miller, I. L.
Miller, T. W.
Miller, W. B.
Millhoff, F. C.
Mills, H. C.
Milne, Gordon
Miner, William H.
Mitchell, S.
Mitsui, B.
Mock, David A.
Moffat, David
Moock, Harry G.
Moon, A. E.
Mooney, William M.
Moore, J. T.
Moore, William M.
Morand, J. J.
Morgan, E. L.
Morris, J. Melville
Morris, M. E.
Morse, C. A.
Morse, W. M.
Mowe, J. V.
Muehlstein, H.
Muehlstein, J.
Mullen, W. F.
Muller, C. W.
Murphy, George F.
Murphy, P. A.
Murphy, W. C.
Murray, C. E., Jr.
Murray, N. J.
Murray, R. E.

N

Naylor, R. B.
Neal, F. G.
Needham, T. J.
Nehleman, Jem
Newhall, A. B.
Newlean, J. W.
Nickel, F. B.
Niles, Charles
Noble, N. S.
Noble, W. M.
Norris, Webster
Norton, E. F.

O

Oakley, C. H.
Oakley, L. M.
Ober, P. H.
Ochshorn, I.
Odell, George
Odell, James E.
Odell, L. G.
Oldfield, Barney
Oliver, J. William
Oliver, N. E.
O'Neil, Charles A.
O'Neil, George L.
Orr, M. E.
Osterman, Wilhelm

P

Paddock, Roy H.
Page, H.
Palmer, T. R.
Palmerton, P. L.
Pam, E. A.
Pardee, A. L.
Parker, Paul P.
Parker, R. B.
Parkin, W. H.
Paterson, D. A.
Peabody, Stephen
Peatty, F. H.
Peck, R. C.
Pell, George E.
Pepper, William M.
Perlish, Henry
Perry, J. G.
Peters, E. V.
Peterson, F. B.
Pfeiffer, Jacob
Pfeiffer, William F.
Phelan, T. A.
Phillips, A. D.
Pierson, Lewis E.
Pilgrim, George
Pitcher, W. L.
Place, C. A.
Place, C. H.
Plumb, L. J.
Pohle, Harry V.
Pontius, P. M.
Poor, S. S.
Powers, D. L.
Price, John W.
Price, W. C.
Priest, E. H.
Proctor, L. B.
Purtill, L. F.
Pusinelli, Charles
Pusinelli, Fred

Q

Quick, Douglas

R

Raymond, H. K.
Reed, E. L.
Reed, I. Ely
Reeves, Alfred
Reich, Walter
Replogle, H. H.
Reuter, Eric C.
Reynolds, F. I.
Reynolds, W. A.
Rheinstrom, B. A.
Rice, D. F.
Richardson, E. B.
Roberts, J. F.
Roberts, P. E.
Robins, Thomas
Roche, Frank,
Rockhill, L. C.
Rodenbough, J. S.
Roe, M. W.
Roper, C. H.
Ross, E. B.
Ross, Franklin J.
Rothschild, M.
Rousmaniere, J. E.
Rowland, J. W.
Royce, H. S.
Rutter, Frank S.
Ryan, L.

S

Salzberg, E. M.
Sanders, W. W.
Sanford, G. S.
Sanford, H. R.
Sawyer, Homer E.
Sawyer, Lawrence T.
Schaal, C.
Schaefer, B. K.
Schaefer, J. F.
Schafer, F. A.
Schafer, Philip
Schank, John C.
Scheinler, G. L.
Scheuer, A. L.
Schulthess, E.
Schleussner, P.
Schultz, F. A.
Schwab, F. M.
Schwartz, A. C.
Schwartz, Morton
Scovill, Edward E.
Scranton, S. S.
Seaman, F. A.
Sears, F. H.
Seger, Charles B.
Seiberling, F. W.
Shackelford, L. T.
Shank, Mac C.
Sharts, F. W.
Shea, J. J.
Shellenberger, H. S.
Shepard, N. C.
Shepard, T.
Simpson, Charles
Skinner, John
Skirm, George W.
Skirrow, E. G.
Slauson, H. W.
Sloane, Charles
Slusser, C.
Small, E. J., Jr.
Smeltzer, E.
Smith, F. Haskell
Smith, G. A.
Smith, H. E.
Smith, H. J.
Smith, H. O.
Smith, Norman L.
Smith, Rowland
Smith, Theodore E.
Smith, W. P.
Smithyman, D. D.
Sniffin, George W.
Sorrick, C. H.
Southerland, C. P. S.
Southmayd, L. N.
Spicer, J. T.
Spindler, H. C.
Springer, F. V.
Stadelman, George M.
Starbird, F. K.
Stauffer, E.
Stedman, James H.
Stephens, William
Stern, Fred
Stiles, Lynn D.
Stiles, William H.
Stires, M.
Stokes, Charles E.
Stokes, M. C.
Storms, Edgar
Straub, O. E.
Strong, Fred
Stuart, Robert M.
Stubbs, R. S.
Suhr, F.
Sullivan, J. P.
Susskind, Jesse
Susskind, Sidney
Swain, J. G.
Swan, C. S.
Swan, H. H.
Sweeney, Charles W.
Sweeney, E. C., Jr.
Sweeney, G. R.
Swett, John A.
Switzer, Maurice

T

Talbot, J. Alden
Tallman, A. V. W.
Tallmer, A. J.
Tamaki, R.
Tanty, J. C.
Tarof, E. J.
Taveniere, Clinton
Taylor, James N.
Teevan, Chas. L.
Tenney, John, Jr.
Terhune, R. A.
Thacher, S. P.
Thomas, J. W.
Thomas, L. H.
Thomas, W. G.
Tiedeman, H. F.
Tierney, E. W.
Tierney, J.
Tipson, Fred. S., Jr.
Titus, F. E.
Tobin, Horace B.
Toeplitz, R. H.
Tonner, R. L.
Townsend, G.
Trafford, L. M.
Treadwell, J. L.
Tucker, A. Y.
Turner, Harold M.
Turner, L. E.
Turner, M. A.
Tuttle, H. B.
Tweedy, O. S.
Twombly, E. K.
Twyford, H. B.

V

Van Alst, J. M.
Vance, L. T.
Van Cleef, F. C.
Van Etten, J. de C.
Van Riper, B. E.
Vermilye, W. M.
Viall, H. R., Jr.
Von Bermuth, F. A.
von Schlegell, V.
Vorhis, H. S.

W

Waddell, J. S.
Waddle, G. A.
Wagner, H. C.
Waite, H. W.
Walker, Hall
Walsh, Thomas F.
Walz, William
Wanning, F. D.
Ward, S. B.
Warner, Lewis C.
Warner, A. W.
Waterhouse, F. L.
Watson, John J., Jr.
Watson, J. K.
Watts, L. A.
Weaver, O. L.
Webber, E. Gray
Weber, C. F.
Weber, L. E.
Webster, E. C.
Webster, H. F.
Weeks, P. S.
Weida, Harry
Weil, Sylvan
Welch, C. J.
Wesley, P. R.
Weston, J. C.
Wheeler, F. E.
White, C. M.
White, D. F.
White, L. M.
White, William T.
Whitehead, Richard R.
Whiting, W. W.
Whitlock, William
Whitman, R. T.
Whitney, R. H.
Whittelsey, C. B.
Wibell, W. L.
Wiegand, W. B.
Willenar, W. H.
Williams, C. S.
Williams, F. D.
Williams, Frank L.
Williams, T. C.
Williamson, H. L.
Wilson, C. A.
Wilson, C. Dudley
Wilson, E. H.
Wilson, W. E.
Winans, W. R.
Wisell, W. D.
Wood, Charles E.
Wood, LeRoy
Woodard, H. J.
Woodard, S. P.
Woodbury, R. B.
Woodward, V. L.
Worthington, H. D.
Worthington, I. A.
Wuchter, W. W.

Y

Yamanaka, S.
Young, Philip E.
Young, John
Young, Henry N.
Young, T. H.

Z

Zech, F.
Zimmerman, H. J.

Annual Meeting of The Rubber Association

Officers' Reports—Constitutional Amendments—Election of Directors and Officers—Division Meetings

THE annual meeting of The Rubber Association of America, Inc., was held at the Waldorf-Astoria at three o'clock on the afternoon of January 9, 1922, President Harry T. Dunn, presiding. The session lasted only an hour, such formalities as the reading of the call for the meeting and the reading of the minutes of the previous meeting being dispensed with upon motion from the floor.

General Manager's Report

The president made no report, as the 16-page report of secretary and general manager A. L. Viles covered the activities of the association during the past year very comprehensively. This report having been printed and mailed to all members, it was not read. Its contents are familiar to readers of THE INDIA RUBBER WORLD who have followed the monthly account of the activities of the association.

Treasurer's Report

The report of the treasurer, William C. Cox, was accepted and placed on file. By curtailing activities and cutting expenses, total expenses were kept well within the year's reduced revenue. The accompanying balance sheet shows the organization to be in a strong financial position with a general fund of $171,440; bond investments, $138,158 at market; cash, $30,058; unexpended division funds, $1,091.

BALANCE SHEET—DECEMBER 31, 1921

Assets		
Cash in bank and on hand		$30,058.56
Investments		136,961.25
Accounts receivable		1,839.59
Accrued interest on investments		1,363.19
Furniture and fixtures	$11,364.87	
Less depreciation	8,180.33	3,184.54
Annual banquet (1922) expense		3.40
Total assets		$173,410.53
Liabilities		
Funds held for disposition		$510.25
Advance firm dues		300.00
New York State income tax withheld		58.75
Unexpended division funds		1,091.14
Annual banquet (1922) receipts		10.00
General fund		171,440.39
Total liabilities		$173,410.53

Amendment of the Constitution and By-Laws

The revision of the constitution and by-laws recommended by the by-laws sub-committee was unanimously adopted. It resulted in the following changes:

Abolition of associate membership.

Restriction of firm membership to manufacturers of rubber goods or of reclaimed rubber, and importers, brokers or dealers in crude rubber in the United States. Canadian companies, scrap rubber dealers and jobbers or wholesalers of rubber goods in the United States or Canada who are now firm members will be transferred to affiliated membership basis.

Broadening of affiliated membership to include firms, corporations or individuals directly engaged in the rubber manufacturing industry in Canada and to include jobbers and wholesalers of rubber goods and scrap rubber dealers both in the United States and Canada, and to include trade publications identified with the rubber industry.

Provision for exercise of discretion by board of directors as to transfer of membership from one firm, corporation or individual to another—instead of its being non-transferable as at present.

Provision to authorize board of directors to make temporary appointments to fill vacancies in the board of directors, until the succeeding annual meeting.

Provision that president and first and second vice-presidents shall be elected from among the personnel of the board of directors (instead of leaving it to custom as at present).

Confinement, to board of directors only, of power to elect or appoint officers—the executive committee having heretofore had that authority also.

Provision that the committee on nominations shall submit the names of twice as many nominees as the number of directors to be elected—instead of leaving it to custom as heretofore.

Elimination of requirement that applications for membership must be endorsed by two directors, leaving only the requirement that a majority vote of the board or of the executive committee shall be necessary to elect.

Provision for the exercise of discretion by the board of directors as to assumption by the association of the expense which may be involved in the undertaking of special work for the particular benefit of a division, instead of requiring that expense to be met by special assessment of the members of that division.

Provision that the quorum at any meeting of the association shall be twenty-five instead of ten members.

Present Manufacturer's Fee Continued

The manufacturer's fee on crude rubber, from which the association derives the largest part of its general fund, was again fixed at three cents a hundred pounds for the year 1922.

Mr. Gunn, chairman of the budget committee, stated for the information of members that the budget proposal for the year 1922, to be presented to the new board of directors, will be the same as last year, plus an increase for the division funds and a campaign for education of the public regarding the new plans for handling guaranties, aggregating $131,450. As justification for this, he pointed out that members had received substantial benefits from association activities which were worth more than all they had put into the association over a period of years.

Votes of Thanks

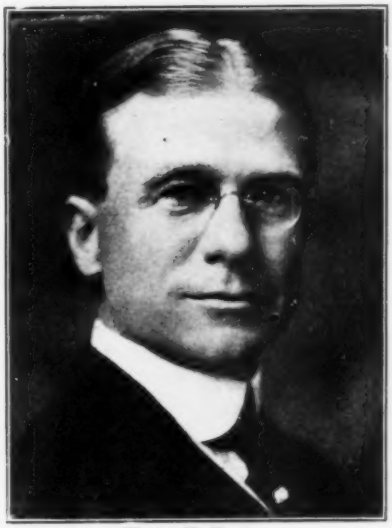
On motion of Mr. Hood a vote of thanks was unanimously extended to Mr. Viles in appreciation of his work during the past year, and on motion of Mr. Gunn a similar vote of thanks was extended to Mr. Firestone in recognition of his excellent work in outlining association policies in the past.

Election of New Directors

The Nominating Committee placed before the association the names of ten firm members from whom to elect five directors.

Officers and Directors of The Rubber Association, 1922

Horace DeLisser
First Vice-President



Harry T. Dunn
President

W. O. Rutherford
Second Vice-President

J. Newton Gunn

George B. Hodgman
Treasurer

A. L. Viles
General Manager-Secretary

F. R. Henderson

E. G. Wilmer

A. H. Brown

J. W. Thomas

H. S. Hotchkiss

F. A. Seiberling

S. G. Lewis

W. O'Neil

J. A. Maguire

J. S. Broughton

J. S. Lowman

The balloting resulted in the election of J. Newton Gunn, president of the United States Tire Co. (reelected); Seneca G. Lewis, vice-president of the Pennsylvania Rubber Co. (reelected); J. S. Lowman, first vice-president of the Philadelphia Rubber Works Co. (reelected); J. W. Thomas, vice-president of the Firestone Tire & Rubber Co., and E. G. Wilmer, president of The Goodyear Tire & Rubber Co.

The appointment of H. Stuart Hotchkiss, president of The General Rubber Co., to fill the unexpired term of Homer E. Sawyer, resigned, was also ratified.

Election of Officers

Immediately following the general meeting, the Board of Directors met in another room of the Waldorf-Astoria and officers of the association for the year 1922 were elected as follows: president, Harry T. Dunn (reelected); first vice-president, Horace DeLisser; second vice-president, W. O. Rutherford; treasurer, George B. Hodgman.

The executive committee for the year consists of the following: Harry T. Dunn, chairman; Horace DeLisser, W. O. Rutherford, J. S. Broughton, F. R. Henderson, and H. E. Sawyer.

A Graphic Rubber Association Chart

It is quite probable that many members have no clear understanding of the manner in which The Rubber Association is organized to function for them. It is rather generally understood, of course, that there is a divisional organization, but just to what extent it goes and how it is supplemented by committee and department organization is unfamiliar to many. Consequently the accompanying chart was prepared to present this information in a graphic way.

Organization Chart

THE RUBBER ASSOCIATION OF AMERICA, INC.

60 Vanderbilt Avenue New York, N. Y.

Division and Committee Meetings

Rubber Reclaimers' Division

The Reclaimers' Division met at the Yale Club, January 9, nine companies being represented. Messrs. C. W. Harrison and L. J. Plumb were elected chairman and vice-chairman respectively, to succeed Messrs. F. H. Appleton and C. W. Harrison. An Executive Committee was also elected, composed of Messrs. F. H. Appleton, E. A. Anderson, J. S. Lowman, J. S. Clapp and J. F. McLean, with the chairman and vice-chairman.

It was arranged to inaugurate through the Rubber Association office a monthly statistical plan which would result in a regular compilation of data concerning the amount of reclaimed rubber produced and the number of pounds of scrap rubber consumed thereby. The Raymond Rubber Co., Titusville, Pennsylvania, was formally elected to membership in the division.

Mechanical Rubber Goods Manufacturers' Division

The annual meeting of the Mechanical Rubber Goods Manufacturers' Division, held January 9, was preceded by a meeting of the Executive Committee of that division at which a majority of the committee was present.

The Executive Committee joined the division at luncheon, following which the division proceeded to the election of officers for the year 1922, and other matters which required attention. Chairman C. E. Cook and vice-chairman C. D. Garretson were reelected and an executive committee was elected, composed of Messrs. J. A. Lambert, George E. Hall, D. R. Burr, J. H. Kelly, J. H. Cobb, C. C. Case and John J. Voorhees, with the chairman and vice-chairman. Progress was made on several matters which are in the process of development by the division.

Foreign Trade Division

This division met at the Yale Club also on January 9 and several matters of a routine character were given attention. Messrs. F. E. Titus of The B. F. Goodrich Co. and H. G. Lubke of The General Tire & Rubber Co. were elected chairman and vice-chairman, respectively, for the ensuing year.

Hard Rubber Division

A majority of the membership was present at the meeting of the Hard Rubber Division at the Yale Club, January 9, and Harry Weida was reelected chairman to serve for the year 1922. It was decided to make an effort to increase the membership and attendance at meetings of the division by enlisting the interest of several hard rubber manufacturers who have not been participating in the activities of the division. General trade conditions were discussed.

Footwear Division

The Footwear Division held its customary annual meeting at the Union League Club, January 9, and Messrs. George H. Mayo and Francis S. Dane were reelected chairman and vice-chairman respectively. The principal subject of discussion was the desirability of further advancing the work of standardizing rubber footwear styles which was begun during the war period.

Accounting Committee

The first annual meeting of the Accounting Committee was held at the association office, January 10, with a majority of the committee in attendance. Messrs. W. O. Cutter and H. Hough were reelected chairman and vice-chairman, respectively, for the year 1922. The most important matter before the committee was the report of its sub-committee concerning uniformity of practice with respect to certain of the major phases of cost accounting. It was found that the sub-committee's report was so thorough and presented so many important problems that it was necessary for each member of the committee to have an opportunity for careful study of it before making his comment. The views of the committee are to be sent to the general manager within the near future and the sub-committee is then to consider the suggestions and to prepare a final report for submission at the February meeting of the Accounting Committee.

A sub-committee was appointed on budgetary control methods, composed of Messrs. R. R. Jennings, A. B. Newhall and A. N. Alexander. Another sub-committee on depreciation of buildings, machinery and equipment (rates and methods) is to be appointed but the personnel of that committee is not yet complete.

Cycle Tire Manufacturers' Committee

The second annual meeting of the Cycle Tire Manufacturers' Committee was held at the Yale Club, January 10, and although the attendance was less than expected, very satisfactory results were secured. Messrs. H. B. Tuttle and A. E. Caldwell were elected chairman and vice-chairman, respectively, succeeding

Messrs. M. C. Stokes and H. B. Tuttle. The monthly statistics concerning inventory, production and shipments of bicycle and motorcycle casings and tubes were thoroughly discussed in an effort to arrange for more satisfactory reports than it has been possible to make due to the inability of some companies to supply all of the detail called for by the statistical forms. A revision of the form was made and it is expected that there will be a decided improvement in the monthly compilations as a result thereof.

A sub-committee was appointed, composed of Messrs. A. E. Caldwell and L. N. Southmayd, to study the subject of guaranties on bicycle tires and to recommend action looking to the adoption of a policy with respect to bicycle tires which shall be in conformity with the new policy adopted by automobile tire manufacturers as to the adjustment of only those tires which are defective in workmanship or material. As soon as the sub-committee report is ready, a special meeting of the Cycle Tire Manufacturers' Committee will be called, if necessary.

Rubber Proofers' Division

The Rubber Proofers' Division met at the Yale Club, January 10, and, as usual, held an interesting meeting at which progress was made on several important matters before the division. The division elected Messrs. J. H. Mason, The Duratex Co., and M. B. Kaufman, Archer-Strauss Rubber Co., chairman and vice-chairman respectively. Messrs. H. A. Flint, J. C. Haartz and W. G. Brewer were elected to serve on the Executive Committee of five, which includes the chairman and vice-chairman.

Rubber Sundries Division

A meeting of the Executive Committee preceded the annual meeting of the Rubber Sundries Division at the Yale Club, January 10, the representation being very satisfactory at both meetings. The Lee Tire & Rubber Co. was elected to membership in the division, L. F. Markell being designated as division representative. Action of a routine nature on several matters was taken. The election of officers resulted in the continuance of Messrs. H. A. Bauman and A. W. Warren as chairman and vice-chairman, respectively. An executive committee was elected also, composed of Messrs. W. H. Balch, P. R. Wesley, F. H. Jones, W. S. Davison and E. E. Huber, with the chairman and vice-chairman.

Tire Manufacturers' Division

The regular monthly meeting of the Executive Committee of the Tire Manufacturers' Division was held preceding the annual meeting of the Tire Division at the Yale Club January 10. Fifteen of the seventeen members of the Executive Committee were present and at the division meeting approximately forty companies were represented, some of them by more than one officer so that the total number of individuals who participated was seventy-four.

J. C. Weston, president of Ajax Rubber Co., Inc., was elected chairman succeeding Seneca G. Lewis. J. V. Mowe, vice-president of the Kelly-Springfield Tire Co., was elected vice-chairman succeeding Mr. Weston. The names of twenty companies were submitted by the Nominating Committee as nominees for election to the Executive Committee of which only fifteen were to be chosen. The vote resulted in the election of the following named companies to serve on the Executive Committee of the division for the year 1922:

Brunswick-Balke-Collender Co.	Hood Rubber Co.
Firestone Tire & Rubber Co.	The Lee Tire & Rubber Co.
The Fisk Rubber Co.	Michelin Tire Co.
The General Tire & Rubber Co.	The Miller Rubber Co.
The B. F. Goodrich Co.	Norwalk Tire & Rubber Co.
The Goodyear Tire & Rubber Co.	Pennsylvania Rubber Co.
Hewitt Rubber Co.	Swinehart Tire & Rubber Co.
	United States Tire Co.

There was considerable discussion of the many phases of the new adjustment conditions and certain plans for educational work among the dealers and the general public were approved. A review was had of the results of the recommendation concerning a service charge on returned goods and the definite expressions of many members indicated that the application of the charge on the basis of five or ten per cent was meeting with substantial success. The procedure in connection with tire and rim standardization activities was discussed, especially from the standpoint of the relation which the Tire Manufacturers' Division of The Rubber Association is to bear in this work to the Tire and Rim Association, the Society of Automotive Engineers and the National Automobile Chamber of Commerce.

THIRD OFFICIAL FAIR TO BE HELD IN BRUSSELS, BELGIUM

From April 3 to 19, inclusive, the third official commercial fair, for 1922, will be held at the Parc du Cinquantenaire, Brussels, Belgium. The executive committee has invited all manufacturers to exhibit, and Americans will find here an excellent opportunity not only to display their own goods, but also to compare the qualities and prices of world products. Among the proposed exhibits, to be arranged in 35 divisions, is listed "India Rubber and Its Applications." All inquiries as to space, etc., should be addressed to Head Office, 19, Grand Place, Brussels, Belgium; or J. T. Whiteley, Belgian Consul, Baltimore, Md.

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

NOVEMBER, 1920, TO AND INCLUDING NOVEMBER, 1921

	Pneumatic Casings				Inner Tubes				Solid Tires			
Month	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
November, 1920	36	5,880,016	649,742	806,023	40	6,131,935	742,815	920,938	11	298,875	21,355	34,217
December, 1920	43	5,508,380	506,111	1,327,153	43	5,786,929	508,446	1,481,285	12	303,473	16,297	40,828
January, 1921	45	5,319,605	703,430	965,417	47	5,586,163	740,824	1,042,617	12	303,753	21,220	29,116
February, 1921	45	5,193,018	819,892	1,073,756	46	5,415,464	916,627	1,129,981	12	304,374	23,365	29,599
March, 1921	46	4,597,103	1,163,314	1,614,651	48	5,044,861	1,346,483	1,643,690	12	283,800	28,710	43,926
April, 1921	49	4,527,445	1,651,418	1,785,951	51	4,916,775	1,762,122	1,983,571	12	269,985	28,859	42,080
May, 1921	59	4,451,668	2,100,917	2,085,882	57	4,751,880	2,210,040	2,342,567	12	264,633	35,156	40,122
June, 1921	63	4,154,456	2,313,265	2,643,850	60	3,835,098	2,359,928	3,232,673	11	240,336	28,395	49,867
July, 1921	63	3,892,037	2,570,524	2,757,581	61	3,122,815	3,020,981	3,603,248	11	220,003	35,123	55,678
August, 1921	66	3,934,853	3,043,187	2,894,442	64	3,649,319	4,430,152	3,804,060	11	216,367	55,694	66,866
September, 1921	63	3,340,798	1,929,268	2,047,929	62	3,827,830	3,274,822	2,645,758	11	161,832	37,441	50,276
October, 1921	64	3,545,030	1,928,271	1,675,169	64	4,732,016	2,843,918	2,016,371	10	163,299	46,274	45,911
November, 1921	64	3,908,342	1,756,555	1,342,519	63	5,203,568	2,126,211	1,540,299	10	173,451	43,537	34,556

Compiled by The Rubber Association of America, Inc.

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

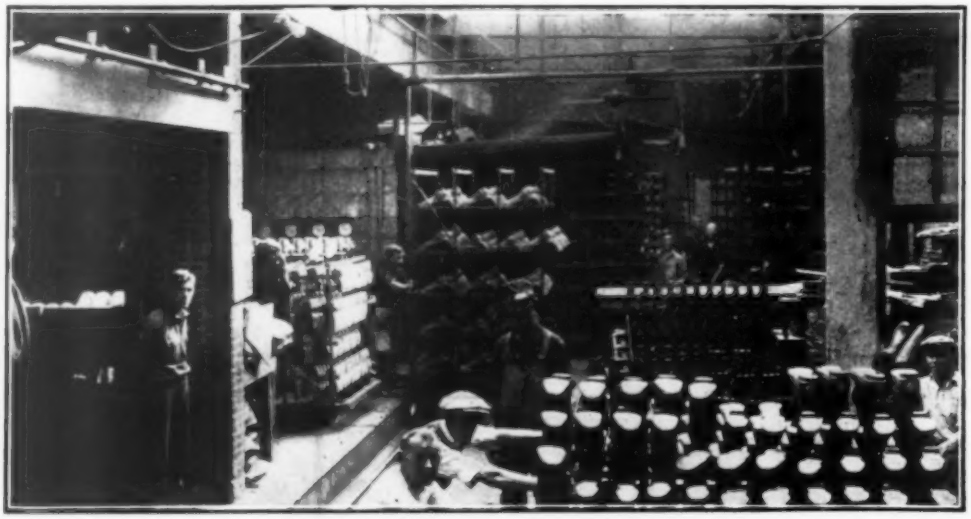
Inspection in Rubber Shoe Making

An Inspector Must Have a Thorough Knowledge of Shoe Construction and All Preparatory Processes

THE production of marketable shoes is to a very considerable degree dependent upon a corps of watchmen called "inspectors." From start to finish they are at their stations guarding against mistakes, carelessness or wilful waste. They cost much, but are a necessity. The following is a brief outline of rubber footwear inspection:

Crude Materials

What may be termed preliminary inspection starts in the laboratory of the plant, where crude rubber, compounding ingredients and fabrics are tested to see that each is up to specifications as per written standard practice. Experience has shown this preliminary inspection to be of the greatest importance for the reason that none of the materials entering into the construction of rubber shoes can be with safety assumed to be up to specifications. This is true particularly of rubber which is likely to vary from one lot to another in vital particulars that only chemical examination discloses.



Loading Rubber Shoes Into the Vulcanizer

Milling, Calendering and Cutting

With crude materials properly vouched for, we next concern ourselves with inspection of the various processes. Inspection in the mill room should include the weighing of compound material. A method should be established whereby the inspector would assure himself that all proper care was used in securing and preparing the proper compounds, and that specifications of formulas were rigidly adhered to. His next supervisory point would be mixing on the mills. Here he would satisfy himself that proper heat was maintained on the rolls, that batches were properly manipulated and given the requisite time, and that all ingredients weighed out for a batch went into it, and were not allowed to accumulate around the machine to be thrown in haphazard at the whim or convenience of the operator. After mixing he would assure himself of the disposition of the mixed batches: whether they were sheeted or slabbed out to a thickness to preclude semi-curing by their own heat. In calender work he must be cognizant of the work done on each machine forming the equipment: toe strips, uppers and foxing on the upper calender; toe tips, cloth heels, joining strips, frictional filling sole, "fish tails," formers, heel lifts on the friction calender; insoles, rag counters, heel stiffening on the rag calender, and, where filler sole is composed of rag on fabric, it is first processed on the friction and then on the rag calender. He must also know on what beam presses the various parts entering into a shoe are cut, for as a rule, linings, fillings, insoles, etc., are apportioned to the same machines week in and week out. As his range of responsibilities includes fabrics the inspector must see that they check with specifications as per factory order, and that they are dry. He must have an intimate knowledge of calender room practice, such as the preliminary warming of stock to give material free from lumps and running smoothly over rolls heated to proper temperatures; the gage at which each stock should be run in sheet for uppers, slabs for soles, or in friction or rag applications. The above would be about the range for this inspector unless he was situated to check the preparation of cement and varnish, the specific gravity of which should be known daily.

Work in the cutting room requires supervision of a different sort. Here the inspector concerns himself with sizes in which material is cut for the various fabric parts, and for uppers and soles. He must be familiar with the ticket for the day, calling as it does for a wide range of styles or types, each with its particular brand, or medallion. He has no right to assume that material from mill or calender room has been properly prepared but must satisfy himself in this particular, as well as that machine and hand cutting has been carefully done, and the parts thus cut are skillfully "hooked" for use of the shoemakers.

Shoe Construction

An inspector of shoe making finds necessary not only a thorough knowledge of shoe construction, but also of all preparatory steps, to the end that he may know whether material has been properly prepared and cut. The work by a shoemaker that an inspector much watch is as follows: applying, piping and placing lining; applying insole; placing shank; placing foxing; placing toe piece;

placing junior; placing second heel piece; placing filler sole; placing upper; placing outsole, together with the use of gage hand roller and stitcher to make a workmanlike job. An inspector finds himself face to face with a task of no mean proportions if he undertakes to cover all of these steps, and can do so only by a carefully worked out system. If he is conscientious, as he should be, he finds it impossible to inspect the work of more than 20 to 25 makers, or a total production of 800 to 1,000 pairs daily, this maximum being possible where the making is confined to one style only, as for women. Where the ticket is divided between men's, women's, child's, etc., the total pairs inspected is greatly curtailed.

Varnishing and Finishing

The next step in process is varnishing and finishing. Some shoes are varnished by dipping four to six pairs at a time attached to an iron bar provided with pins to hold the shoes in place. Some styles, on account of their construction, are varnished separately by use of a brush. There is plenty of work here to engage the close attention of the inspector, as varnish carelessly used will relegate the best made shoe to grade as a "second." Then, too, there is the condition, quality, and specific gravity of the varnish to be looked after, unless this be vouched for by the inspector in the mill room, or by the laboratory.

Vulcanizing

Shoes are now ready for the vulcanizer, which if properly equipped, is furnished with a mechanical inspector in the form of an automatic registering thermometer which records on a prepared form a charting of the degrees of heat through each minute of time allowed to the vulcanization process. After curing, the shoes are stripped from the lasts, and placed on tables for trimming, inspection and packing. This final inspection is made more or less onerous according as the work has been organized through the preceding departments. There are, however, certain defects that would develop only after vulcanizing, such as damage to shoes that had stuck together because carelessly placed in the vulcanizing cars, and from knife or shears in trimming. If, however, poor material has been used, if in the preparation of stock or fabric, or cement, there has been careless work that has escaped the eyes of the inspectors along the line, the action of varnish, plus the searching test of vulcanization, is fairly sure to bring some defects to light, as shown in the following classifications: bad stock, stock blisters in uppers, blistering soles, pulled heels, loose soles, air pockets in heels, peppered uppers, blistered uppers, blistered piping strips, dirty linings of uppers, loose edgings on tap soles, bad sole cutting, binding cut in making room, bad work in varnishing, damaged in handling, cut in trimming.

When rubber shoes are placed in cars for vulcanizing some care is used to group them as per ticket, with the result that as they are stripped from the lasts they are placed upon the tables for inspection in the same order. Working and checking from the daily ticket the inspectors are greatly aided by this arrangement.

Formal Inspection

The first task is to mate the shoes, after which comes the formal inspection, which, if reduced to steps, would be categorically as follows:

1. Take a shoe in each hand by the sides. Note if the lines of tops of uppers are even, and if the pair is a right and left. Press the counters inward, and disclose the condition where they join the heel.
2. Place soles and heels flat together. Note both shoes are the same size, and that outsole is properly placed, rolled and stitched, and that strip is unwrinkled and even.
3. Bring inner sides of both shoes together and upright, with soles touching. Look for blemishes on upper and inside of shoe, that gage at forepart is the same for both; that outsole is properly placed, rolled and stitched, and toe tip is not wrinkled.
4. Take both shoes in right hand, tip toes up for examination. Turn left side of left shoe up, and note that insole is properly placed, rolled and stitched, and strip even, and no blemishes on side.
5. Turn shoes over and examine soles for size, brand, blisters, mars, height at back, and test for pulled sole.
6. Turn toes down and heels up, with outsoles away, and note that the back seam is even and not cut through, and outsole properly placed, rolled, and stitched; that points are alike. Raise heel and test back seam.
7. Turn shoes over, taking them in the left hand so right side is up, and note rolling and stitching of outsole, and that strip is even and no blemishes show on uppers.
8. Return shoes to table with right hand, heels to edge of table if perfect; toes to edge of table if change of size. If seconds, place lengthwise of table.
9. After placing on table look at inside of shoes for varnish stains and dirty linings.

Seconds and Rejections

The shoes classified as "seconds" are given special examination by the chief inspector, who uses his judgment in confirming the rejections made by his assistants. There are some minor defects in the nature of blemishes that detract from appearance, that can be eliminated in the hands of a skilled repairer. Those finally rejected are displayed on benches assigned for the purpose, and supervisors, department inspectors and foremen, at a stated time daily, are obliged to acquaint themselves with the character and probable causes of defects, and govern themselves accordingly. Each inspector keeps a memorandum in which are the makers' "Nos." in his division, and against which he records defects in workmanship as they appear, to the end of keeping tabs on the quality of work done by the makers under him. A method that works to stabilize quality production, makes use of the records of individual makers to classify and grade, and pay them accordingly. Another method devised to concentrate attention of all makers to defects in workmanship, is to display at "strategic points" samples of rejected shoes, with printed information and cautions.

With a quantity of seconds on hand and steadily accumulating, it becomes vital to "pair them off" as rapidly as possible. This requires a system of records and classification that will show at a glance what sizes and styles are waiting for mates. Inspection service calls for daily reports to the chief inspector made by the inspectors on printed forms adapted to the work in each division.

DURABLE BOX FOR INNER TUBES

Peerless Inner Tube Box

The accompanying photograph illustrates a type of folding paper box, which is capable of sustaining a 350-pound weight. These containers are especially designed for inner tubes or hardware specialties, and are excellently adapted for this purpose. The ends are 6-ply and sustain the above weight without collapsing or buckling. A brief description of these articles, manufactured by the Peerless Paper Box Manufacturing Co., 1137 West 6th street, Cleveland, Ohio, appeared in the December issue of THE INDIA RUBBER WORLD.

The National Automobile Show

The Production of Automobiles Has Become Next to the Largest Industry in America

THE Twenty-Second Annual National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, was held in New York, N. Y., January 7 to 14, 1922. The exhibits fully occupied four floors of the Grand Central Palace. Nearly four hundred types of motor cars, representing 92 different makes, were shown, while the exhibits of automobile accessories numbered 236.

The crowded attendance during the week demonstrated the widespread interest of the public in the automobile and its accessories.

It is interesting to note that the production of automobiles has become, in less than a quarter of a century, next to the largest manufacturing industry in America. The industry represents a capital investment of $1,250,000,000, produces 2,500,000 vehicles annually, and employs 333,000 people, besides those employed by the associated industries manufacturing bodies, tires, accessories, etc.

The far-reaching importance of the automobile industry clearly indicates that the day will come when these great events will be truly international in character, partaking of the nature of world's fairs, but concentrated upon this single industry. That, however, will require facilities for housing display samples of the product of the entire world. Such facilities are not now possessed by any American city.

The displays at each succeeding show give evidence of the tireless efforts of engineers and designers to perfect engine, chassis and body, resulting in economy, protection and comfort to the motorist. It is noteworthy that in spite of the added value because of such developments the prices of automobiles in general are undergoing reductions.

Two of the development tendencies referred to are the increased use of closed cars and the progress of various forms of steel disk wheels in supplanting wood and wire wheels. It is estimated that one-third of the cars in this year's show are equipped with disk wheels. Many wood-spoke wheels are being built with steel felloes. The chief item restraining the more rapid supplanting of the wooden wheel by the steel disk wheel is the cost of the hub of the latter. This item will be reduced by the further application of engineering skill and quality production, and bring about the elimination of the wooden wheel on a competitive basis of price.

Automobile's Relation to Other Business

Measured by volume of business the automobile industry ranks first among all industries. Its rank among all manufactures, according to the Bureau of Census, is third, slaughtering and packing ranking first, and steel second.

Automobile Registration

The estimated number of motor vehicles in use in the United States at the close of 1921 was 10,000,000, an increase of 7 per cent over the registration for 1920. In New York State the motor vehicle registration up to December 9 showed increases of registration over 1920 in all classes as follows: passenger cars, 13 per cent; commercial cars and trucks, 30 per cent; omnibuses, 36 per cent. The motor vehicles represented totaled 754,085 for New York State. In this total motorcycles and trailers are not included. Trailers showed a large increase, their registry being 3,091, as against 1,754 in 1920, an increase of 76 per cent. Motorcycles decreased by 15 per cent, the registry being 25,024 as against 29,342 in 1920.

Accessories

The accessories exhibited occupied most of the fourth-floor space and comprised a great variety of appliances. A few well known puncture-proof inner tubes and puncture-proof and non-leak devices were shown; also rubber repair stock for tubes, etc. The display of accessories in general was very large and varied and covered every motoring need and convenience.

Those in which rubber formed an essential feature were the following:

AUTO PEDAL PAD CO., INC., 318 West 52nd street, New York, N. Y. Pedal pads for all makes and models of automobiles.

AMERICAN RUBBER & TIRE CO., Akron, Ohio. Cord tires, inner tubes and tire repair accessories.

COFFIELD TIRE PROTECTOR CO., Dayton, Ohio. High-grade molded endless protector of rubber for insertion between tube and casing.

COLLINS PUNCTURE PROOF TUBE CO., Hackensack, N. J. Endurance puncture proof red inner tubes.

THE JON-CON TIRE PROTECTOR CO., 2124 North 15th street, Philadelphia, Pennsylvania. "Jon-Con" tire protector, an endless molded rubber band reinforced by a centrally inserted duck ply.

WELDO-PATCH MANUFACTURING CO., 160 Fifth avenue, New York, N. Y. Demonstration of self-welding rubber patching stock applied to mend holes, cuts and tears in inner tubes or other soft rubber goods without cement or vulcanization.

U. S. COMPRESSION INNER TUBE CO., INC., 25 West 43rd street, New York, N. Y., and Tulsa, Oklahoma. Thick molded inner tubes of special cross section embodying the compression principle affording when inflated in a tire casing efficient protection against pinching, rim cuts, stone bruises and slow leaks.

SEWELL CUSHION WHEEL CO., 1300 Gratiot avenue, Detroit, Michigan. Sewell cushion wheel.

Among the companies exhibiting storage batteries in hard rubber jars were Paul M. Marko & Co., Inc., 1402 Atlantic avenue, Brooklyn, New York, and the Philadelphia Storage Battery Co., Ontario and C streets, Philadelphia, Pennsylvania, whose battery also has a slotted rubber separator.

Among the windshield cleaners displayed having rubber blades was the "Storm King," electrically operated from either battery or dry cells.

Among the exhibits of accessories not of rubber there were many of special interest, for example, the following:

A. SCHRADER'S SON, INC., 783 Atlantic avenue, Brooklyn, New York. Universal tire valves, dust caps, pressure gages, pump connections, air chuck for stopping the waste of compressed air. The advantages of the company's products were featured in a collection of neat illustrated bulletins of handy size.

MORSE CHAIN CO., Ithaca, New York. Morse front end silent chain drives.

LINK BELT CO., Philadelphia, Pennsylvania. Silent chain drives.

DIAMOND STATE FIBRE CO., Bridgeport, Pennsylvania. Diamond-Fibre products specially featuring Diamond-Fibre gears.

GENERAL ELECTRIC CO., Schenectady, New York. Battery charger for service stations. Contacts of tungsten, silver and platinum for ignition and other purposes. Also water Japan.

IDEAL CLAMP MANUFACTURING CO., INC., 198 Bradford street, Brooklyn, New York. Ideal hose clamps.

AUTOMOBILE AND TIRE PRODUCTION AND DEMAND

Coincident with the National Automobile Show, held in New York, N. Y., from January 7 to 14, Alfred Reeves, general manager of the National Automobile Chamber of Commerce, issued some facts and figures concerning the automobile industry during the year 1921 which are not without significance as indicating the tire business outlook for 1922.

Automobiles now registered in the United States total approximately 10,000,000, of which about 9,000,000 are passenger cars and 1,000,000 are trucks. Registrations for the year 1920 totaled 9,211,295 cars, of which 841,690 were trucks, indicating an increase during the past year of about 7½ per cent in passenger cars and about 18 per cent in trucks, or a combined gain of only about 8½ per cent for the year 1921, as against 22 per cent for the year 1920.

The automobile production for the year totaled 1,680,000 vehicles, a decrease of 24 per cent from the 1920 production. Of these 1,535,000 were passenger cars and 145,000 were trucks. As exports for the year were 30,639 passenger cars and 7,748 trucks, it would appear by comparison with the registration figures that the year's production of trucks had been practically sold out together with the balance of the 1920 production, but that the 1921 production of passenger cars had exceeded sales. While the difference is nearly 895,000 cars, sales have been much larger than this indicates It must be remembered that an increasing number of old cars go out of commission annually and that replacement by the purchase of new cars does not increase the registration totals. Also the business depression throughout the country has flooded the used car market with unregistered cars, while many owners who have retained their cars are not using them, or having two cars, have registered only one. Thus the registration totals, while showing the number of cars in use, do not indicate the total number of used cars in running condition. Decreased use of automobiles in mileage per car is indicated by the fact that whereas registrations have increased about 8½ per cent for the year 1921, gasoline consumption has increased only 5.9 per cent.

Although it had been estimated by rubber company statisticians that about 32,000,000 tires would be required for the year 1921 to replace those worn out on the 9,211,295 cars registered at the end of 1920, at the rate of 3½ tires per vehicle, the 1921 production totaled only 19,379,000 pneumatic tire casings, 24,157,000 inner tubes and 377,000 solid tires. And this not only took care of replacements but original equipment for the 1,680,000 cars produced, an item of 6,720,000 tires in itself. As compared with the 32,400,000 tires produced during the year 1920, this represents a decrease of 33 per cent.

While much of this decrease may be attributed to greater care and economy in the use of tires, and particularly to decreased use of automobiles, as already alluded to, it is likely also that still greater mileage is being obtained from the more general use of cord tires of ever-improving quality, and it is quite possible that the generally accepted ratio per car for annual replacements, now 3½ tires, may again have to be lowered. During the past year it has been only 1⅓ tires per registered car, but as low a ratio cannot continue.

What the 1922 tire output will be depends entirely upon general business conditions, which common opinion holds will be materially better than in 1921, though perhaps not so good as in 1919 and 1920. Owing to reduced prices, automobile manufacturers hope to see production for 1922 reach the 2,000,000 mark. This would call for 8,000,000 tires for original equipment. To this must be added the tires necessary for replacement on the 10,000,000 cars now in use. On a basis of 3½ tires per car this alone would call for 35,000,000 tires. Conservative rubber men believe, however, that the actual demand will be nearer two tires per car, or 20,000,000, making a total demand of some 28,000,000 tires and 35,000,000 tubes. The small number of solid tires produced in 1921 indicates conclusively the steady gains being made by giant pneumatics as equipment for trucks.

REPORT OF THE TIRE AND RIM DIVISION OF THE S. A. E.

Pneumatic Tires and Rims

(Proposed Revision of S. A. E. Standard)

The Tire and Rim Division recommends that the present S. A. E. standard for pneumatic tires and rims be revised by eliminating the 32 by 3½, 33 by 4 and 33 by 4½-inch rim sizes and the corresponding regular and oversize tire sizes, and by adding the 30 by 3½-inch straightside rim and the 31 by 4-inch oversize straightside tire. The adoption of this proposal will reduce the present standard to 5 rim sizes and 9 tire sizes for passenger cars and an equal number for motor trucks.

Particular emphasis is laid on the fact that this recommendation is not intended to call for immediate discontinuation of all other tire or rim sizes.

The original list of standard pneumatic tire sizes which was first adopted by the Association of Licensed Automobile Manufacturers nearly 15 years ago has been changed at frequent intervals, additions generally being made until during the latter part of the recent war a definite schedule for eliminating certain sizes by groups at stated intervals of time was approved. Instead of becoming more effective, the standard was more or less disregarded by many car and tire manufacturers for use on new equipment. This condition led to lack of cooperative effort and differences of opinion among the groups interested.

As the result, a conference was held in Cleveland in November, 1920, which was attended by tire, rim and automobile manufacturers and a resolution was passed that the Society appoint a special committee representing the National Automobile Chamber of Commerce, The Rubber Association of America, and the Society of Automotive Engineers, for the purpose of carefully studying the existing conditions and preparing a recommendation which would meet with the approval of the industry and the National organizations representing its various branches.

The committee thus appointed conferred with the automobile and tire manufacturers and carefully analyzed the situation. Much thought was devoted to coordinating the many interests involved and the proposal now recommended was finally agreed upon, submitted to the Standardization Committee of the Tire Manufacturers' Division of the The Rubber Association of America, which approved it, and to the National Automobile Chamber of Commerce. The report is now submitted to the Standards Committee and the Society for approval and adoption in compliance with the regular procedure of the Society.

PROPOSED S. A. E. TIRE AND RIM RECOMMENDED PRACTICE

	Rim		Tire Size		
Type	Size	Type	Regular	Oversize	Tire-Seat Diameter
Passenger car.....	30 x 3½	C	30 x 3½	31 x 4	23
	30 x 3½	SS	.....	31 x 4	23
	32 x 4	SS	32 x 4	33 x 4½	24
	32 x 4½	SS	32 x 4½	33 x 5	23
	34 x 4½	SS	34 x 4½	35 x 5	25
Motor truck.....	34 x 5	SS	34 x 5	36 x 6	24
	36 x 6	SS	36 x 6	38 x 7	24
	38 x 7	SS	38 x 7	40 x 8	24
	40 x 8	SS	40 x 8	42 x 9	24
	44 x 10	SS	44 x 10	.....	24

All dimensions in inches.

The list of tire and rim sizes revised in accord with the proposal of the Division is given in the table. The Division recommends that the proposed list be used by passenger-car and motor-truck designers to select tire sizes for apparatus not yet in production, or at such a time as a change to a recommended size can be logically made.

It is also recommended that for figuring speedometer gear ratios and fender and wheel housing clearances, the actual tire widths and outside diameters be measured on the tires to be used.

FLAPS MARKED TO FIT TIRE AND RIM SIZES[1]

The use of a correctly-designed flap, properly applied in the casing, will insure full and satisfactory service from the tube, while an incorrectly-designed flap or improper application of the correct flap is certain to result in damage to tubes and casings.

To fit properly the flap must reach to a point on the inside of the casing approximately even with the top of the rim flanges. If the flap is so wide that the edges come above this point the flap edges have been known to cut into the casing, the tube following, resulting in a ruined tire. On the other hand, if the flap is too narrow there is great danger of one or both of these edges being folded under when the tire is mounted on the rim. This will quickly lead to tube pinching.

The importance of proper fit indicates the reason for supplying flaps to fit each size of tire on every size of rim on which the tire can be used. For example, it should be evident that a 33 by 4 tire will require a different width of flap when used on a 32 by 3½ rim—which is 2.312 inches wide—than when used on a 33 by 4 rim—which is 2.688 inches wide.

Passenger Car Tire Flaps

In order to simplify the matter as much as possible and to insure the use of the proper flap, all United States "floating" flaps for straightside tires are now branded with a group letter. This letter indicates the tire and rim combination for which the flap should be used, and the following is a list of these various groups:

FLAP MARKINGS ACCORDING TO TIRE AND RIM SIZES

Tire Size	Tire Type	Rim Size	Rim Type	Flap Group Letter
30x3½	S. S. Cord	30x3½	S. S.	S
32x3½	S. S. Cord	32x3½	O. D.	B-B
32x3½	S. S. Fabric	32x3½	O. D.	B-B
32x3½	S. S. Fabric	32x3½	S. S.	E
32x3½	S. S. Cord	32x3½	S. S.	E
31x4	S. S. Cord	30x3½	S. S.	S
32x4	S. S. Cord	32x4	S. S.	D
32x4	S. S. Fabric	32x4	S. S.	H
32x4	S. S. Cord	32x4	O. D.	A-A
33x4	S. S. Cord	32x3½	S. S.	B
33x4	S. S. Cord	32x3½	O. D.	B-B
33x4	S. S. Fabric	32x3½	O. D.	B-B
33x4	S. S. Fabric	32x3½	S. S.	E
33x4	S. S. Cord	33x4	S. S.	E
33x4	S. S. Fabric	33x4	S. S.	I
34x4	S. S. Cord	34x4	O. D.	C-C
34x4	S. S. Cord	34x4	S. S.	G
34x4	S. S. Fabric	34x4	S. S.	I
34x4	S. S. Fabric	34x4	O. D.	C-C
32x4½	S. S. Cord	32x4½	S. S.	K
32x4½	S. S. Fabric	32x4½	S. S.	O
33x4½	S. S. Cord	32x4	S. S.	D
33x4½	S. S. Fabric	32x4	S. S.	H
33x4½	S. S. Cord	33x4½	S. S.	H
33x4½	S. S. Fabric	33x4½	S. S.	R
34x4½	S. S. Cord	33x4	S. S.	E
34x4½	S. S. Cord	34x4½	O. D.	B-B
34x4½	S. S. Cord	34x4½	S. S.	I
34x4½	S. S. Fabric	34x4½	S. S.	M
35x4½	S. S. Cord	34x4	O. D.	C-C
35x4½	S. S. Cord	34x4	S. S.	G
35x4½	S. S. Fabric	34x4	S. S.	I
35x4½	S. S. Fabric	34x4	O. D.	C-C
36x4½	S. S. Cord	36x4½	O. D.	F-F
36x4½	S. S. Cord	36x4½	S. S.	I
36x4½	S. S. Fabric	36x4½	S. S.	N
36x4½	S. S. Fabric	36x4½	O. D.	F-F
33x5	S. S. Cord	32x4½	S. S.	K
34x5	S. S. Cord	33x4½	S. S.	H
35x5	S. S. Cord	34x4½	O. D.	B-B
35x5	S. S. Cord	34x4½	S. S.	I
35x5	S. S. Fabric	34x4½	S. S.	M
35x5	S. S. Fabric	34x4½	O. D.	B-B
37x5	S. S. Cord	36x4½	O. D.	F-F
37x5	S. S. Cord	36x4½	S. S.	I
37x5	S. S. Fabric	36x4½	S. S.	N
37x5	S. S. Fabric	36x4½	O. D.	F-F

[1]Technical Service Department, United States Tire Co.

Tires are shipped from the factories equipped with flaps to fit those tires when mounted on the rims with which they are most generally used. For example 33 by 4 tires are being shipped out with flaps to fit them on 32 by 3½ rims for the reason that the 33 by 4 rim has been adopted only recently and there are far more 32 by 3½ rims in use than 33 by 4. As soon as this condition reverses itself, 33 by 4 tires will be supplied with flaps to fit 33 by 4 rims.

Truck Tire Flaps

The same considerations as to fit and application apply to truck tire flaps. In fact, their importance is increased because of the higher inflation pressures and consequently the greater stresses imposed on the tube when its seating is not correct.

United States truck tire flaps are furnished in seven sizes, each designed to fit a certain size of pneumatic cord truck tire when mounted on a certain size rim. One size of flap, No. 4, may be used with more than one tire and rim combination and is so marked.

Each flap bears a number to which reference is made in the following table, showing for what tire and rim combination it is intended:

FLAP MARKINGS ACCORDING TO TIRE AND RIM SIZES

Tire Size	Tire Type	Rim Size	Rim Type	Flap Group Number
34x5	Cord	34x5	S. S.	18
35x6	Cord	34x5	S. S.	17
36x6	Cord	36x6	S. S.	1
38x7	Cord	36x6	S. S.	2
38x7	Cord	38x7	S. S.	4
40x8	Cord	38x7	S. S.	5
40x8	Cord	40x8	S. S.	4

Pneumatic cord truck tires are shipped from the factories with flaps designed to fit them on their own size of rims. While oversizing pneumatic truck tires without changing the rims is not advocated, it is recognized that it is being done, and therefore flaps are listed to take care of this condition. When a pneumatic cord truck tire is to be mounted on the next size smaller rim, it is absolutely necessary to exchange the flap furnished with the tire for the flap which will fit it on that rim, otherwise the life of the tube will be extremely short.

INGENIOUS USE FOR OLD INNER TUBES

The many homely but practical uses found for worn-out tires and inner tubes are limited only by the ingenuity of those with sufficient imagination to devise ways of utilizing what might otherwise be thrown away. Often the workman in some trade is the one to make such a discovery and apply it.

Palm Shield for Tile Handlers

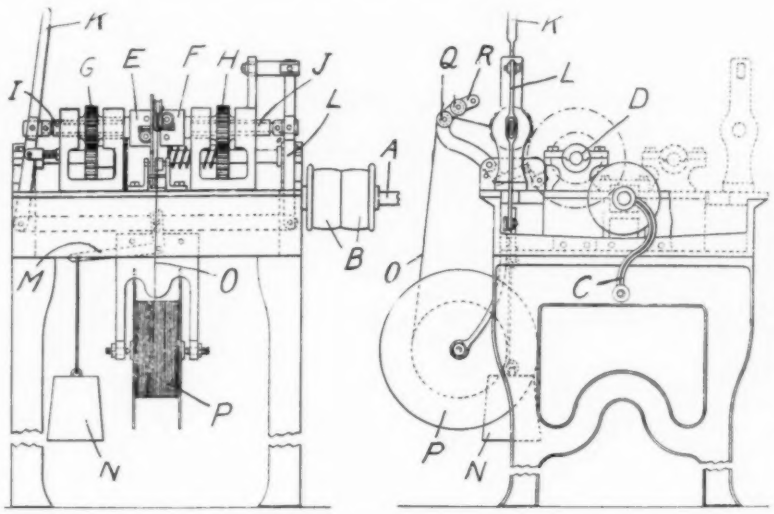
Men who handle hollow tiles need protection for their hands. Tiles break easily and then present a jagged edge; besides, the nature of the material from which they are made has a tendency to roughen the skin. In the absence of a suitable glove, preferably of durable rubber, it remained for tile handlers in California to devise a makeshift to serve as substitute. They have lately cut from old inner tubes pieces to fit the palm, and run a thong through them to go over one finger to hold them in place. A correspondent writes that hundreds are in use. They are found much more satisfactory than leather gloves which wear out very fast from contact with the tiles.

Golf-Ball Winding Machines

Thread-Winding Machines Are Invented and Perfected for the Manufacturer's Exclusive Use

GOLF balls are no longer produced of solid molded gutta percha but instead are built up by winding rubber thread or tape on a central core of rubber, either solid or containing a liquid under pressure, the wound ball being finally encased in a cover consisting of two hemispherical shells of gutta percha.

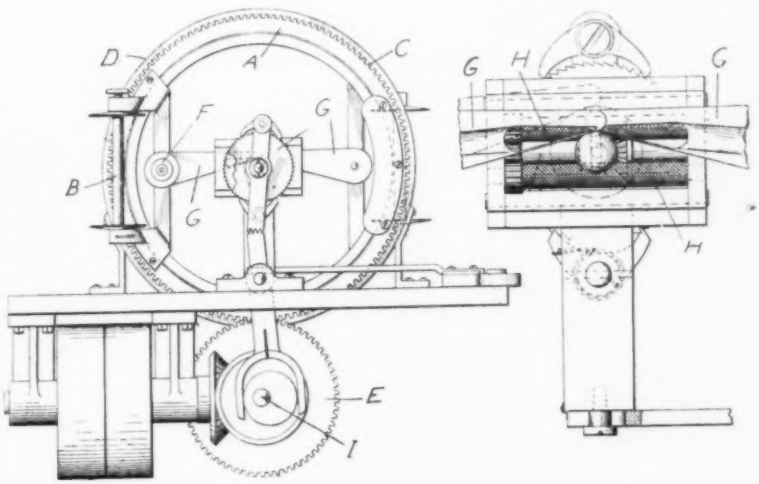
There are a number of patented machines for winding ball centers and properly tensioning the rubber used in winding them. The special features of some of these machines are given in the description and illustrations that follow.



McDaid's Machine

Gammeter's Winding Machine

Gammeter's machine winds vulcanized rubber thread upon a spherical core to form a compact ball. The illustration shows an end elevation of the machine, and a detail of the corrugated rollers which hold and turn the ball while being wound. Two rings *A*, each having a stock spool *B* upon which the rubber thread is wound, have external gear teeth *C*. The rings are revolved in opposite directions, on the circular frame *D*, by pinions *E*. The two threads are passed from the spools *B*, through tension devices *F*, and are guided by the needles *G* as they are wound on the core. The core is held between and turned by four parallel knurled rollers *H* while the thread is wound upon it. The ball-holding devices are automatically separated as the ball grows in size. During each revolution of the driving shaft *I*, the rollers *H* are turned so that the ball is revolved on a horizontal axis during about one-half of the revolution, while for the other half the supports for the rollers are being moved in the opposite direction, causing the ball to turn on its vertical axis. Thus the ball is turned, first upon one axis and then another, bringing different great circles of the ball into the winding plane. During the winding, the rubber thread is stretched to approximately its limit of safety, so that the whole winding is under great tension.



Gammeter's Machine

McDaid's Golf-Ball Machine

This machine winds the rubber thread on the core of the ball and rotates the ball about an intermittently changing axis, at the same time turning it continuously about a fixed axis. The illustration shows a front elevation and an end view. The main shaft *A* is belt-driven by pulleys *B*, or it may be turned by the hand-crank *C*. This drives the shaft *D* by means of a spur-gear and pinion fixed to a friction-clutch, by which the machine is started and stopped. The shaft *D* drives the rotary heads *E* and *F* through gears *G* and *H*. These rotary heads are keyed to the hollow sleeves *I* and *J*, and they may be separated or brought together by levers *K* and *L*. They are held toward each other with a yielding pressure by the bell-crank lever *M* and weight *N*. These two heads consist of core-engaging disks driven by bevel pinions and worm gears in such a way that the core is turned about two axes as mentioned above.

The rubber thread *O* passes from the drum *P* over the pulley *Q* mounted on lever *R*, and through an automatic cutting device, to the core held between the rotary heads *E* and *F*. The rubber thread keeps the lever *R* in an elevated position. In case the thread should break, however, the lever drops, throws out the clutch and stops the machine. When the ball has reached the desired size the thread comes in contact with a knife edge in the cutting advice and is severed, thereby releasing the clutch lever and stopping the machine.

Of distinctly different type is the following machine which utilizes disks rather than rollers.

The Worthington Winding Machine

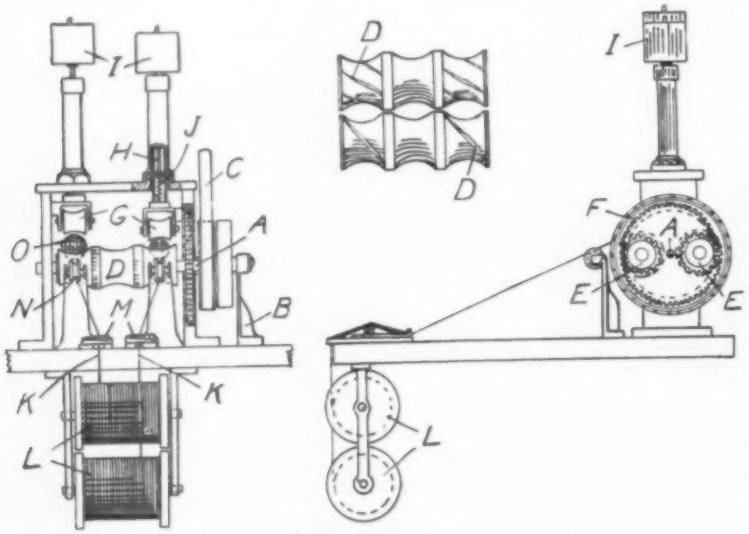
The Worthington machine has two disks with grooved surfaces, in which the core is held and rotated at different speeds. The two ball-holding disks *A* and *B* have concentric grooves in which the core *C* is held while being wound. These disks are mounted on shafts *D* and *E*, respectively, which are driven from the main shaft *F* at different speeds by pinions *G* and *H*, and gears *I* and *J*. Two bell-crank levers *K* and *L*, operated by a treadle, engage the ends of the feathered shafts *D* and *E*, respectively, which are provided with springs *M*. In this way the two disks may be simultaneously brought together or separated.

In operating the machine, the core *C* is placed between the disks and the rubber tape attached to it. The machine is then set in motion and the operator holds the tape in his hand, applying the necessary tension. As the ball is carried around the axis of the disks the tape is wound upon the core. As the disks revolve at different speeds, the ball is turned so as to present different circles to the winding plane.

A vertical machine comprising two winding units is a step toward greater efficiency of production as indicated in the following description.

Cochrane's Vertical Winding Machine

Cochrane's machine is designed to wind two balls at the same time. The illustration shows a front elevation, a side view, and a plan of the winding rollers. The driving shaft *A* is journaled in the frame *B* and is driven by a belt C. The horizontal winding rollers *D* are also journaled in the frame and are driven by pinions *E*, which engage the internal gear *F* keyed to the main driving shaft *A*. These rollers are fluted with a number of indentations cut obliquely at different pitches. Above the rollers *D* are two concave rollers *G*, mounted in yokes on the lower ends of spindles *H*. These spindles have weights *I* on their upper ends, while the lower ends have spiral springs *J* to provide a yielding pressure.



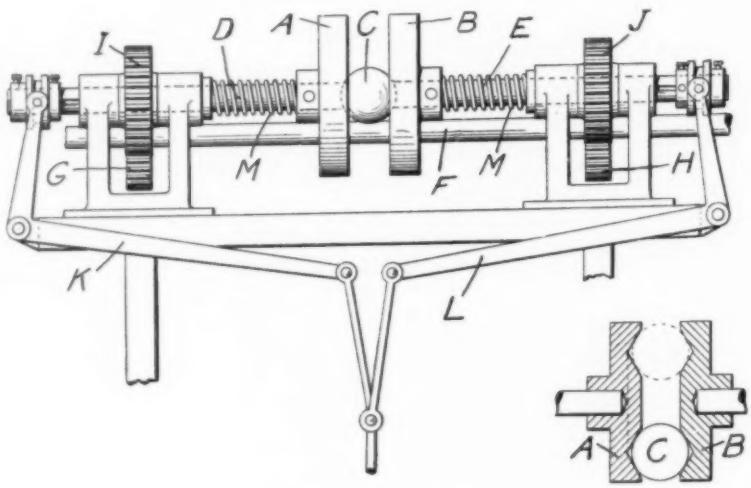
Cochrane's Machine

The rubber threads *K* are unwound from the reels *L* and the ends passed under the tension clips *M*, over the guide pulleys *N* and attached to the cores *O*, which are dropped between the fluted rollers *D*. The rollers G are lowered until they rest upon the cores, which revolve continually in different directions as the rubber is wound upon them.

A simple form of vertical automatic machine adapted to wind balls singly has some advocates. The one described below is typical.

Whitesmith's Vertical Winding Machine

Two views of the Whitesmith machine are shown, in which *A* and *B* are two V-grooved rollers driven by pinions *C* and *D*, which are in turn driven by a gear *E* mounted on a sleeve *F*.



The Worthington Machine

Fixed on the outer end of this sleeve is the disk-clutch *G* formed with a hand-wheel *H*. The driving member *I* of the clutch is thrown into engagement with the driven member *G* by a stirrup-lever *J* operated by the handle *K*, lever *L* and spring *M*.

The ball *N* is mounted in a cup *O* and held there by the lower edge of the cup, which is slightly crimped. These parts are fixed to the lower end of a vertical spindle *P*, which slides in the frame of the machine and supports at its top the weight *Q* to give pressure to the core during the winding. On the spindle is a bracket *R* supporting an arm S adjustable vertically and adapted to engage the lever *L*. When the ball has reached the proper size, the lever *L* trips the clutch and stops the machine.

Some leading types of English golf-balls are wound on the following machine.

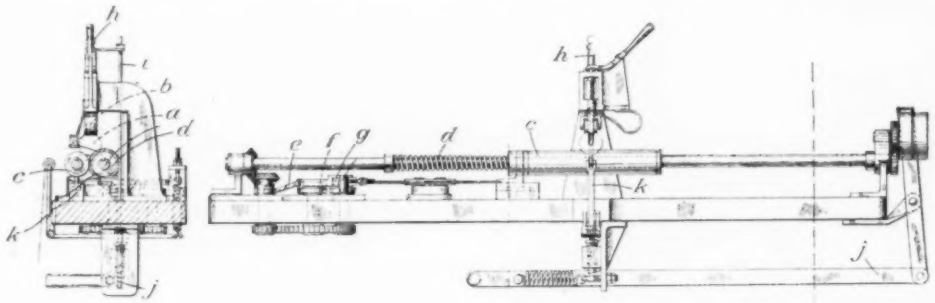
Gray and Hubbard's Winding Machine[1]

This machine comprises a moving roller against which the core is yieldingly held so as to permit it to rotate about any axis passing through its center. Means are provided to turn the core about one axis and also to and fro about a second axis.

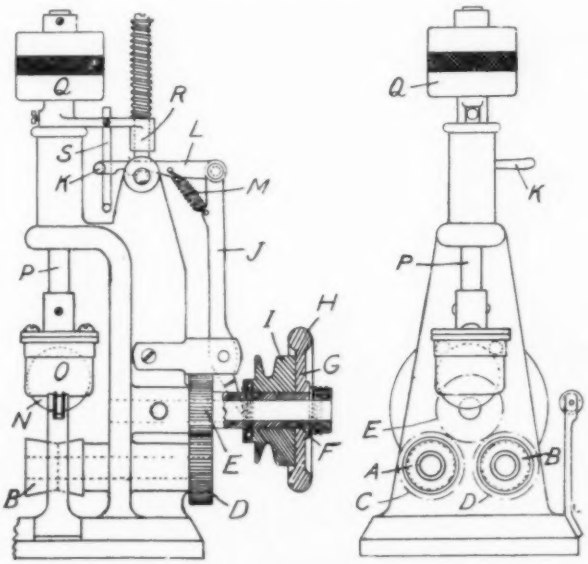
In the illustration, the core *a* is pressed by a concave roller *b*, or by three caster-like balls or rollers, against rollers *c* and *d*, mounted on driven shafts. The roller *c* is reciprocated along its shaft against the action of a spring *d* by means of two adjustable oscillating levers *e* and *f*. The roller is connected by a flexible wire to a block *g*, which is re-

[1] C. H. Gray and John Hubbard, British patent No. 159,630.

ciprocated along the lever *f* by the lever *e*. The roller *b* is carried by a spring-loaded plunger *h* so shaped as to be prevented from turning. A rod *i* normally engages a spring-controlled, belt-shifting bar *j* to maintain the driving belt on the fast pulley, but is operated to release it and stop the machine by the plunger *h* when the ball is fully wound, and by a spring-controlled lever *k* upon breakage of the thread.



Gray and Hubbard Machine



Whitesmith's Machine

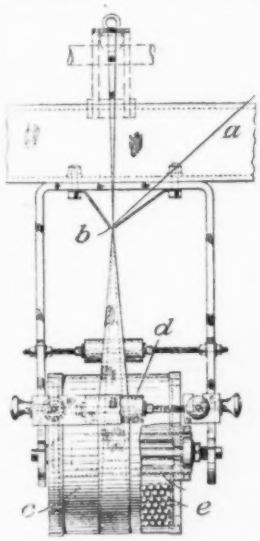
The matter of uniform tension of the elastic winding is of much importance in producing a ball of uniform density and perfect shape. This is obtained by the following device.

Thread Tensioning Device[2]

This machine is designed to be used as an auxiliary in connection with the Gray and Hubbard core-winding machine previously described, and illustrated by the two views on this page.

The illustration shows a winding machine which permits regulation of tension on the elastic thread wound on a golf ball core. The tensioning means for the winding mechanism comprises a revolving drum arranged to be driven by the pull of the material which is being wound.

On the right is shown a side view of the machine, in which the supply of rubber tape *a* is represented entering the machine through a slotted guide *b* which is in the form of a narrow elongated loop of wire. This guide keeps the tape *a* flat in cross-section. From the guide the tape passes around the front of a tensioning drum *c*. A roller *d* is so placed that it can be pressed against the surface of the drum *c* with varying pressure. The tape *a* passes between this roller and drum and may be squeezed to any desired extent. The tensioning drum, which is the main feature, contains a quantity of steel balls *e* for the purpose of retarding its revolution.



G. & H. Tension Machine

After circling the drum *c* the rubber tape passes upward to be wound on the arrangement indicated at the top of the illustration.

[2]C. H. Gray and John Hubbard. British patent No. 159,631.

The Manufacture of Liquid-Filled Golf-Ball Cores

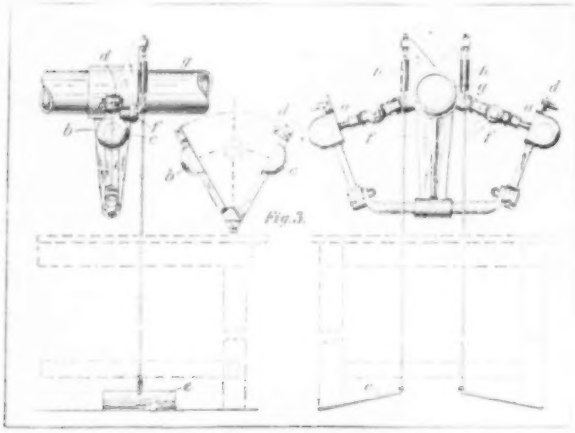
Golf balls with liquid-filled cores are increasing in popularity owing to improved control and flight imparted by this method of construction over the ordinary solid golf ball.

In an article on the subject of golf-ball manufacture[1] several liquid-center balls were briefly mentioned. One of these comprised a container made of double-texture fabric filled with liquid. Rubber tape is wound under high tension around the container and rubber threads are then wound around the tape windings. Finally the cover of gutta percha is applied. The liquid-filled center contains a ball of specific gravity greater than the liquid, and is made of hard composition or steel. Another patented liquid-center ball contains an inner rubber bag or container filled with liquids of different specific gravities, one of which is mercury.

The liquid containers are ordinarily formed by gathering a circular piece of cured rubber dental dam into sack form, filling the receptacle thus made with a liquid of some sort such as water, rubber cement, etc., and tying tightly the neck of the sack to

[1]THE INDIA RUBBER WORLD, October 1, 1921.

retain the liquid filler. When filled and tied the excess rubber is trimmed away and that which projects beyond the tie is laid back against the sack and the center is wound by hand with a few layers of narrow dental dam rubber succeeded by layers of narrow rubber of the same sort. The center is then ready for



Gray's Machine for Liquid-Filling Cores

machine winding with rubber thread up to the proper size to receive the hemispherical shells of gutta percha or balata composition which are applied under heat and pressure.

An effective machine for the accomplishment of the liquid filling of hollow elastic bodies is the subject of a recent British patent by a well-known golf-ball manufacturer.[2] The illustration shows the arrangement of parts for filling two centers simultaneously, and a detail view of one of the divided shells in its open position.

The operation of the device is as follows: The rubber flasks to be filled are pushed onto the nozzles *a* so that the necks of the flasks make a seal with the nozzles and the two halves *b* and *c* of the supporting and restraining hinged shells which are brought together so that they embrace the flasks while they are on the nozzles. The shell halves are then locked together by a latch *d* so that the flasks are completely enclosed in the spherical chambers formed by the shell halves. The pedals *e* are depressed, thereby opening cocks *f*. Fluid pressure then passes from the supply conduit *g* through the nozzles *a* into the rubber flasks. The latter stretch until they completely fill the spherical chambers within which they are located, and further expansion thus prevented. When this condition is attained the charge can proceed no further, and the cocks are then closed by releasing the pressure from the pedals, the springs *h* acting to close the cocks.

The necks of the filled flasks are sealed before removal from the nozzles. In practice, as each flask is removed from its nozzle, the neck of the flask is nipped by means of a spring clip or other device which can be slipped onto it before it is removed from the nozzle and thus prevent the fluid from extruding. The neck can be finally sealed by tying, or in any other convenient manner. The charging fluid may be a rubber solution in the form of a paste of the consistency of a thick oil.

[2] C. H. Gray, British patent No. 159,993.

RUTHERFORD HEADS M. & A. M. A. FOREIGN TRADE COMMISSION

The appointment of W. O. Rutherford, of The B. F. Goodrich Co., Akron, Ohio, as head of the foreign trade commission of the Motor and Accessory Manufacturers' Association is undoubtedly an event of significance to the rubber industry. His appointment results from a request by the Bureau of Foreign and Domestic Commerce at Washington for a committee to coordinate the cooperative activities with the department's automotive division, the object of the plan being to promote the sales of motor products overseas.

Mr. Rutherford is well fitted for his new responsibilities as he has held, since with the Goodrich company, the position of assistant sales manager; general sales manager and director; second vice-president in charge of sales; and member of executive committee. He now holds the offices of vice-president of the Goodrich company; director of the Motor and Accessory Manufacturers' Association; and second vice-president of The Rubber Association of America.

The Dayton Rubber Manufacturing Company

Since its incorporation May 17, 1905, The Dayton Rubber Manufacturing Co., Dayton, Ohio, has steadily increased its holdings, its capital, and its plant equipment, following throughout a policy of steady advancement. Acquiring, in 1905, a new factory building, to which some additions were made, this company began the manufacture of a general line of mechanical rubber goods, followed later by the production of tires, which now include both the Dayton pneumatic tires and the Dayton Airless clincher tires.

The Dayton Rubber Manufacturing Co., Dayton, Ohio

In 1914 the original capitalization of $150,000 was increased to $1,000,000, while in the same year plans were being considered for an extensive addition to the company's plant. The main building of structural steel, concrete and brick, was, as completed, 500 by 150 feet, while a part of this addition was three stories in height. In 1920, a capital increase to $10,000,000 was announced, while another addition of approximately 100,000 square feet of floor space, which quadrupled the plant capacity, was completed. The present officers of the company are: John A. MacMillan, president and general manager; C. E. Hooven, secretary and treasurer; and Edwin B. Self, sales promotion and advertising manager. Mr. MacMillan, in summing up the company's activities for the present year, states that the sales volume for the first six months of 1921 totaled more than the entire sales for the year 1920, and from present indications, the same volume will continue throughout the year.

Determination of the Particle Size of Pigments[1]

By W. W. Vogt[2]

THIS paper presents the results of a modified and refined technique whereby is obtained a greater degree of accuracy in the determination of the obscuring power of pigments than is possible with previously published methods.[3] This modification consists in the employment of relatively stabile suspensions of the pigments in various mobile liquids, thereby securing a more complete dispersion of the solid phase and therefore more nearly correct values for the obscuring power.

Obscuring Power

The obscuring power of a given suspension is taken as the total projected area of the particles of pigment in the suspension. In the actual determination a sufficient concentration of pigment particles in suspension is placed in position above the filaments of an electric lamp, so that the direct rays of the lamp are just cut off, that is, the image of the filaments is extinguished. In the case of opaque pigments the phenomenon is one of light extinction, whereas in the case of transparent particles the extinction of the direct rays is due to the refraction or diffusion of the direct light rays in such a manner that the direct image of the filament is extinguished.

The results are calculated in terms of the amount of pigment necessary to extinguish the direct rays from a given area or reciprocally as the area which a given weight or volume of pigment will obscure. We prefer to express this value as square centimeters per cubic centimeter of pigment. For example, a suspension of such concentration that 10,000 cc. contain one cc. of actual volume of pigment. The obscuring power is then the area which the given amount of suspension will cover to a depth just sufficient to extinguish the light rays.

Relation of Obscuring Power to Particle Size

In the mathematical treatment it has been assumed that the pigment particles are spherical. This assumption has been made by W. B. Wiegand[4] in some of his work on the structure of compounded rubber.

Let W = a given weight of pigment
g = the specific gravity
$W/g = V$ = the absolute volume of pigment
v = the average volume of one particle
d = average diameter of the particles
n = number of particles in V

(1) Then $v = 1/6\ \pi\ d^3$

(2) $V/v = n$

(3) Therefore $n = \dfrac{V}{1/6\ \pi\ d^3} = \dfrac{6V}{\pi\ d^3}$

The projected area of one particle is equivalent to the area of a plane passed through the center of the sphere.

(4) Therefore $= 1/4\ \pi\ d^2$

The total projected area of n spheres $= \dfrac{n\ \pi\ d^2}{4}$ (5)

Substituting in (5) the value of n given in (3)

$$\frac{6V}{\pi\ d^3} \times \frac{\pi\ d^2}{4} = \frac{3V}{2} \times \frac{1}{d}$$

The projected area or obscuring power $OP = K\dfrac{1}{d}$.

Therefore the obscuring power varies inversely as the diameter of the particles.

As a matter of convenience in manipulation it is desirable to make the determination on a given weight of pigment and calculate the results on the basis of square centimeters per gram. Multiplication of this figure by the specific gravity of the pigment gives the results on a volume basis; that is, square centimeters per cubic centimeter.

Apparatus

The turbidimeter consists essentially of a Nessler tube with a side tube sealed in close to the bottom and connected to another tube equipped with a plunger for changing the level of the liquid in the Nessler tube, essentially in the same manner as the well-known Sargent colorimeter. The Nessler or reading tube is mounted above a 40-watt parallel filament tungsten lamp in such a way that the direct rays from the lamp must come up through the bottom of the tube only. A millimeter scale is attached to the reading tube in such a manner as to permit easy reading of the height of the liquid in the tube.

Auxiliary apparatus consists of a grinding surface of plate glass, steel spatula, necessary volumetric flasks and pipettes for obtaining proper dilutions, etc.

Technique

The method consists in grinding the pigment with a suitable vehicle or grinding medium and then suspending the resulting paste in a suitable suspending medium. By practical experience we have arrived at two grinding media, castor oil and glycerine, and two suspending media, alcohol and a mixture of glycerine and water, 30 and 70 parts by volume, which are applicable to all of the well-known rubber pigments. After the suspension is obtained a suitable amount is poured into the reading tube and by raising the level of the suspension a point is reached where one can no longer see the filaments of the lamp through the turbid suspension. The height of the column is then measured by means of a millimeter scale attached to the reading tube and a simple calculation gives the obscuring power.

The reciprocal of the concentration of the suspension in grams per liter divided by the height of the column in centimeters gives the obscuring power in square centimeters per gram. Multiply by the specific gravity of the pigment and express the obscuring power in square centimeters per cubic centimeter.

Example

Concentration .05-g. per 1000 cc.
Height of column 4.0 cm.
Specific Gravity = 2.0

$$\text{O. P.} = \frac{1000 \div .05}{4.0} = 5000 \text{ cm.}^2 \text{ per g.}$$

For specific gravity,

2.0 = 10,000 cm.^{2} per cc.

Notes and Precautions

One to two g. of the pigment is placed on the glass plate, moistened with oil or glycerine and rubbed up with a flat steel

[1] Presented at the 62nd meeting of the American Chemical Society, New York, September 6 to 10, 1921.
[2] Research Division, The Goodyear Tire & Rubber Co.
[3] Lewis and Baker, Journal of Industrial and Chemical Engineering, Volume 12, No. 9, page 890. Also turbidimetric method of the Chemical Warfare Service for determining the total obscuring power of smoke clouds, wherein the values are given in terms of the density and volume of the smoke.
[4] Journal Industrial and Engineering Chemistry, 13, 2, 118.

spatula for ten minutes. Further increases in the grinding period to a total of one hour showed no increase in the obscuring power, thus showing that complete dispersion is obtained.

An excess of grinding agent does not influence the test except that it slows up the proper incorporation of the pigment in the agent.

In the actual observation the following points should be noted:

Always raise the level of the liquid and take the end point as the disappearance of the filaments, not as their reappearance on lowering the level.

Take the observation with rested eyes and with fair rapidity. The point of disappearance is sharp and does not require prolonged observation.

The room should preferably be darkened.

Results by various operators at different times on the same sample show the method to be accurate to two per cent as a maximum deviation from the mean.

Blue, green and red light filters have been placed between the lamp and tube, with no effect on the readings. When working with white pigments the blue light is rather more restful to the eye.

The brilliancy of the lamp, varied by changes in voltage, is without effect on the determination.

The concentration of the suspensions may be changed as much as three-fold without effect on the final value. Reducing the concentration to one-half increases the height of the column two-fold, etc. It is well to so regulate the concentration of the suspension that the height of the column on final reading is between 20 and 40 mm.

The effect of the index of refraction of the suspending medium upon obscuring power has not been studied in detail. It is obvious that if the pigment were a crystalline body and the suspending agent a liquid with the same index of refraction as the pigment, then the system would be transparent and thus have no obscuring power. However, we have determined the obscuring power of whiting, zinc oxide, magnesia, magnesium carbonate and barytes in castor oil and alcohol, and glycerine and water, with the same result. Therefore, we believe that it would be a very infrequent combination of circumstances which would bring together a crystalline solid and a suspending medium of the same index of refraction and of consequent zero obscuring power.

Certainly for the pigments given in the above table the index of refraction of the various liquids used is without effect.

In Table I are given the average values obtained on several samples of the various pigments from authentic sources of supply.

For reference the diffusing values given by Lewis and Baker* are included in column eight. It will be noted that their values are in all cases much lower than our values. This might be accounted for in part by the actual variations in the pigments but in that event we would expect some of their values at least to be equal to or higher than ours. Since this is not the case it is our belief that our values are higher because of the more complete dispersion of the pigment phase of the suspensions which in turn is attributed to refined technique.

Practical Value of the Test

Microphotographs were obtained on the pigments given in Table I. Although accurate measurements of the average size of the particles were not made, two independent observers compared the series of micro-photographs in the order of their particular size. For example barytes is coarser than magnesia, but finer than tripoli, etc. In both cases complete agreement was obtained throughout the list and the pigments were finally listed in order of the increasing size of the particles. The sequence thus found agreed with the sequence obtained by listing according to the numerical value of obscuring power in terms of sq. cm. per cc., with the exception of magnesium carbonate which was only slightly out of line. This is evidence as to the validity of the mathematical treatment given above.

The obscuring power test has been used as a measure of the average particle size of the pigment in research work in determining the conditions necessary to give maximum fineness of a pigment formed by precipitation methods. Inasmuch as the individual particles were below the resolving power of our microscope the obscuring power test furnished rapid accurate control of average fineness.

There is conclusive evidence that the accelerating power of some of the common inorganic accelerators such as magnesium oixde is dependent, other things being equal, on the fineness of the pigments. A high obscuring power for magnesium oxide indicates in general good acceleration, although the curing value is not a linear function of the particle size.

Relation to Compounding

By compounding regularly spaced increments by volume of several widely different fillers in a basic stock and obtaining stress strain curves on the correctly cured stocks we have arrived at the following conclusions:

(1) Plotting the load necessary to produce a given elongation,

TABLE I

Pigment	Concentration of Suspension in grams per liter	Grinding Agent	Suspending Medium	Sq. cm. per g.	Sq. cm. per cc.	Sp. Gr.	Diffusing Values in Linseed Oil Sq. cm. per g.
Gas black	0.05	1	2	6,300	11,000	1.75	2,200
Antimony pentasulphide	0.25	1	2	6,300	11,000	3.35	.....
Lampblack	0.05	1	2	4,500	8,000	1.75	1,830
Iron oxide	0.50	1	2	1,430	6,400	4.50	348
Zinc oxide	0.50	1-3	2-4	1,000	5,650	5.65	560
Lithopone	0.50	1-3	2-4	820	3,600	4.40	560
Corroded lead	0.50	1-3	2-4	465	3,100	6.70	260
Sublimed lead	0.50	1-3	2-4	425	2,700	6.35	.....
Clay*	0.50	3	4	1,000	2,600	2.60	.....
Litharge	0.50	1	2	250	2,400	9.50	.....
Magnesia	0.50	1-3	2-4	540	1,900	3.50	.....
Barytes	0.50	3	4	350	1,500	4.30	170
Asbestine	0.50	1	2	200	1,400	2.55	.....
Aluminum	0.50	1-3	2-4	550	1,520	2.75	.....
Whiting	0.50	1-3	2-4	550	1,400	2.55	295
Magnesium carbonate	0.50	1	2	440	1,100	2.05	.....
Tripoli	0.50	3	4	470	900	1.90	.....
Talc	1.00	1-3	2-4	290	760	2.60	.....
Mica	1.00	2	4	120	360	3.00	.....

1 = Castor oil.
2 = Alcohol.
3 = Glycerine.
4 = Glycerine 30% by volume. } Water 70% }

*Clay was also suspended in water containing Lux soap chips, to secure complete dispersion. Values for the different media were identical.

*Lewis and Baker, Journal of Industrial and Chemical Engineering, Volume 12, No. 9, page 890. Also turbidimetric method of the Chemical Warfare Service of determining the total obscuring power of smoke clouds, wherein the values are given in terms of the density and volume of the smoke.

(300 per cent) against the volumes of filler added to 100 volumes of rubber, it is found that the load stress increases linearly.

(2) The slope of this line n is a measure of the stiffening action of the filler.

In Table II is tabulated the numerical value of the slope against the obscuring power for several different pigments.

TABLE II

	O. P. cm.² per cc.	Slope—N	O. P. per N²K
Gas black	11,000	.50	22.0
Red oxide	6,400	.33	19.4
Zinc oxide	5,600	.24	23.3
Barytes*	3,000	.15	20.0
Barytes	1,500	.08	18.8
Clay	2,600	.33	7.8

*An elutriated sample specially prepared.

As will be noted, clay is a decided exception, giving a much greater displacement of the stress-strain curve than would be accounted for by its obscuring power. Otherwise there is good agreement.

Finally by a reference to Table I it can readily be seen that those pigments which have an obscuring power of less than 5,000 square centimeters per cubic centimeter belong, without exception, to the so-called inactive class of fillers. A very fair idea of the compounding possibilities of an unknown pigment may be secured by the determination of the obscuring power and by a comparison with the known values.

Summary

(1) By a turbidimetric method the average particle size of pigments may be determined.

(2) Practical methods and technique are given.

(3) The results obtained classify pigments in the order of their practical compounding value.

(4) The test is especially recommended as a specification test for determining the average particle size of different samples of the same pigment.

The Mechanical Properties of Calendered Sheets[1]

There Is a Strong Difference in Mechanical Properties of Sheet in Transverse and Longitudinal Direction

THE difference in mechanical properties in both directions in calendered rubber is obvious from the following figures, which were obtained by experiment:

	Transverse Direction	Longitudinal Direction
Tensile strength in kgs. per sq. cm.	2.3	9.5
Elongation at break in per cent.	483	100

This difference in mechanical properties in both directions was thought to be caused by a certain grain inherent in crude rubber. This appeared, however, not to be the cause. When a thin sheet of crude rubber was subjected to tensile tests, tensile strength and elongation at break were practically equal in both directions. From this result it appeared that the difference in mechanical properties was caused by the mechanical working up of the rubber on the rolls or the calender.

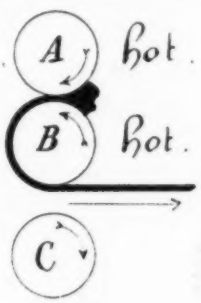
Sheets Prepared on the Mixing Rolls

Rubber was masticated on the mixing rolls and sheeted as smooth as possible on this machine. From the tensile-test figures obtained it appears that the differences in both directions are very small and can be neglected.

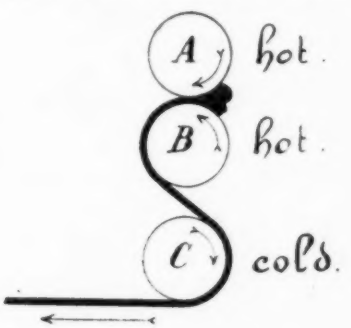
Sheets Prepared on the Calender

Calendering experiments were carried out, adopting three different schemes of calendering as follows: Calendering according to Scheme I, in which rolls *A* and *B* are hot, and *C* is not in use; the rubber sheet, showed only slight differences in both directions. Calendering according to Scheme II, in which rolls *A* and *B* were hot, and *C* cold; the rubber sheet showed very large differences in transverse and longitudinal direction. Calendering according to Scheme III, in which rolls *A*, *B*, and *C* were heated, and the rubber sheet was prevented from contracting by frictioning on cloth, confirmed the foregoing experiments.

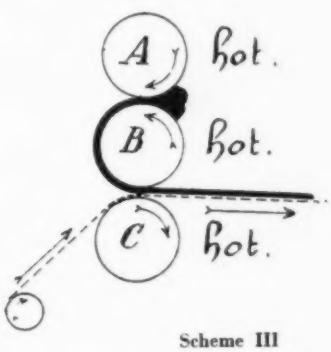
It was first thought that the difference shown by Schemes I and II was due only to the cooling of the rubber sheet calendered according to Scheme II. In such case the differences in both directions should also appear by calendering according to Scheme I when followed by immediate cooling.



Scheme I



Scheme II



Scheme III

Two experiments to prove this suggestion were carried out (1). A calendered sheet, Scheme I, was cooled as quickly as possible on a zinc tube, (2) another sheet, by Scheme I, was cooled in a bath of cold water placed immediately behind the calender rolls. In both instances there was no difference in transverse and longitudinal directions.

The Joule Effect

Careful consideration has convinced the author that this remarkable phenomenon stands in close relation to what is known as the Joule effect of raw rubber.

When a strip of elongated raw rubber is heated it contracts with considerable force. While calendering between the rolls

[1] Abstract of a paper by Dr. A. van Rossem, director of the Netherland Government Institute, Delft, delivered at the Rubber Conference, London, June, 1921, and published in The India-Rubber Journal, London.

A and *B* the rubber is heavily pressed, which causes it to become elongated considerably longitudinally. During rotation with roll *B* it is heated considerably and is therefore inclined to contract, which, however, is impossible as long as the rubber is adhesive to the rolls.

When calendering according to Scheme I, the rubber sheet is able to contract immediately on leaving the roll *B*. That this contraction occurs is proved by the fact that a circle marked on the rubber sheet on roll *B*, immediately becomes a very sharp ellipse on leaving the roll.

According to Scheme II, the calendered sheet is kept under tension by roll *C* and therefore is unable to contract. While rotating with roll *C* the rubber is cooled, and after leaving the roll contracts only slightly. Hence calendering in this way, a strain is left, which is the cause of the marked difference in mechanical properties in both directions.

That this is really the case is confirmed by heating experiments. If one heats the calendered rubber sheets and gives them the opportunity of giving way to the Joule effect the strain will vanish and the differences in mechanical properties disappear.

Calendering according to Scheme III affords complete combination of the foregoing experiments. The result is a strong difference in mechanical properties in longitudinal and transverse directions. While heating at 70 degrees C. (158 degrees F.) a strong contraction is visible, and after that the differences in mechanical properties practically vanish.

In conclusion a few points of interest in regard to this remarkable phenomenon are given.

Hot Vulcanization

It is obvious from the foregoing experiments that the differences in transverse and longitudinal direction will disappear after hot vulcanization, because they vanish at 70 degrees C. (158 degrees F.).

Vulcanization with Peachey's Process

A rubber sheet calendered according to Scheme II was vulcanized by Peachey's process with sulphur dioxide and sulphuretted hydrogen. The results of one preliminary experiment indicate that the differences in mechanical properties in transverse and longitudinal direction are maintained after this vulcanization process.

Gutta Percha and Balata

Gutta percha and balata also show the described phenomenon in a remarkable though different degree. The tensile strength in both directions is about the same but the elongation at peak shows great differences. A remarkable fact with these materials is that they show this difference as well when calendered according to Scheme I, which certainly stands in relation with the plasticity of these materials.

VOLUME INCREASE OF COMPOUNDED RUBBER UNDER STRAIN[1]

Comments on an Article by H. F. Schippel[2]

By Henry Green[3]

This discussion was written expressly for the purpose of offering a suggestion, to those interested in the subject of "volume increase," as to a method of studying this phenomenon not specifically mentioned in Mr. Schippel's paper. The following excerpt will be sufficient to present the idea involved:

While studying the nature of the stress-strain curves for rubber containing different pigments in varying quantities, the writer [H. F. Schippel] considered the stability of the rubber surrounding each particle of pigment in the rubber body, and thought that possibly when the rubber body was elongated sufficiently the rubber might pull away from the particles of pigment in their axes of stress and cause vacua to be formed on both sides of each particle, the net result of which would be a considerable increase in the volume of the rubber body as a whole.

A preliminary test was made by preparing a transparent vulcanized compound containing a fair proportion of medium-size lead shot. When this compound was stretched, the formation of vacua proceeded gradually until each lead shot had its conical vacua on both sides in the direction of strain. This was very satisfactory and the test was immediately applied to miscellaneous samples of rubber compounds, with the result that this integral phenomenon was actually found to take place.

The author believed that it would be both interesting and novel to eliminate the shot, introducing in its place a material like ground barytes, and to observe microscopically the conditions arising during subsequent stretching of the rubber compound.

Rubber sheets approximately 0.01-inch in thickness containing

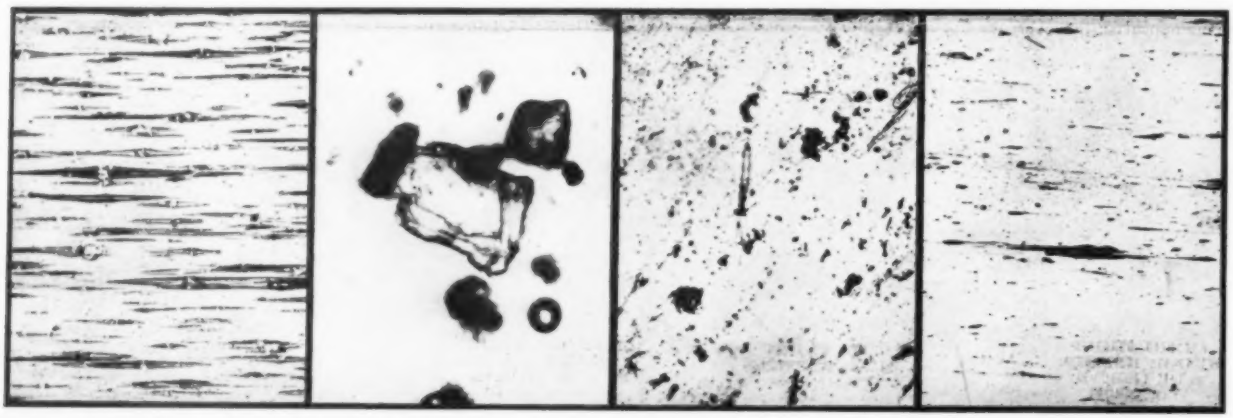


FIG. 1—STRETCHED RUBBER CONTAINING BARYTES, SHOWING "VACUA" AT ENDS OF PARTICLES AND EXTENDING IN THE DIRECTION OF STRAIN—MAGNIFICATION 200 DIAMETERS

FIG. 2—UNSTRETCHED RUBBER, COMPOUNDED WITH BARYTES—MAGNIFICATION 1,500 DIAMETERS

FIG. 3—UNSTRETCHED RUBBER CONTAINING "AGGLOMERATED MASSES" OF PIGMENT—EACH BLACK SPOT IS COMPOSED OF PERHAPS THOUSANDS OF PARTICLES

FIG. 4—SAME RUBBER SHOWN IN FIG. 3, IN A STRETCHED CONDITION—NOTICE THAT THE AGGREGATES ARE SOFT AND EASILY DEFORMED INTO LONG STREAKS

The large particle in the center of Fig. 2 is the only one present which is in close contact with the rubber; the others are surrounded by a film of gas and will, therefore, produce "vacua." The particle in the lower right hand corner appears to be a bubble. There is actually a particle present, however, as was revealed by closer focusing.

[1] Presented before the Division of Rubber Chemistry at the 61st meeting of the American Chemical Society, Rochester, N. Y., April 26 to 29, 1921.

[2] The Journal of Industrial and Chemical Engineering, 12, 1920, 33.

[3] Research Laboratory, New Jersey Zinc Co., Palmerton, Pennsylvania.

the barytes which it was desired to study were prepared. These sheets were cut into strips 3.5 by 0.25-inch in dimension. One end of a strip was fastened to a microscope slide by means of sealing wax. After the solidification of the wax the rubber was stretched to the desired percentage elongation and the strip fastened at the other end of the slide. A suitable mounting medium such as glycerol or cedar oil was then allowed to flow under the strip and some also placed on the upper side. After placing a cover glass upon this, the specimen was ready for examination.

The result is shown in Fig. 1. The barytes particles are clearly shown with conical vacua at the ends, extending in the direction of elongation. The clear white field is the pure rubber containing a large number of small barytes particles which evidently have produced no vacua.

The experiment was modified as follows: The rubber strip was fastened to the glass slide at one end only, and the specimen was placed on the microscope—which was equipped with a mechanical stage—and slowly stretched. As the elongation increased the stage was moved in the opposite direction so that any individual particle of barytes could be made to remain in the field during observation. In this way the actual formation of the vacua could be studied. It was noticed that certain particles invariably formed vacua, while with others it was almost impossible to produce them. The reason for this fact is probably explained in Fig. 2. Of the eleven large particles present the white one in the center is the only one in close contact with the rubber. As in the preceding figure the clear field is the rubber in which the barytes is imbedded. The other particles are surrounded by a gaseous film, which on account of its low index of refraction causes the particles to appear dark. It is hardly necessary to state that the so-called "vacua" will be formed in this latter case, while with the large particle in the center the result cannot safely be predicted.

Finer pigments than barytes have also been investigated by this method. For materials as fine as zinc oxide, carbon black, etc., a 2-mm. oil immersion objective and a magnification preferably of 1,500 diameters are required. The cover glass is dispensed with and the objective immersed directly in the mounting fluid. So far, the results of experiment have indicated that no vacua are formed with fine pigments when compounded in small percentages. This naturally leads to the point discussed by Mr. Schippel in regard to the effect produced by agglomerated masses on volume increase. Where the percentage of pigment is high, aggregation is more likely to be present, and it was suggested that if aggregated masses tended to augment the volume on extension, it would be easily understood why highly pigmented rubber possessed this property to such a marked degree.

Following a theoretical and mathematical discussion based on his experimental data the author adds the following conclusion:

Theoretically, at least, Mr. Schippel's contention that agglomerated masses of pigment are responsible for a part of the volume increase, is justifiable. Whether or not this evidently small volume increase is sufficient to account for the quantity found experimentally, will be difficult to decide. No doubt there are other forms of aggregation, such as very small ones like doublets, which upon extension will produce sufficient volume increase to explain fully Mr. Schippel's interesting discovery.

DITHIOCARBAMATES

Dithiocarbamates are carbon disulphide addition products with amines. In general they are water-soluble white crystalline substances and are extremely powerful accelerators of vulcanization.

MEETING OF AMERICAN SOCIETY FOR TESTING MATERIALS

Announcement is made of the twenty-fifth annual meeting of the American Society for Testing Materials, which will be held June 26 to July 1, 1922, at Atlantic City, New Jersey, with headquarters at Chalfonte-Haddon Hall Hotel. C. L. Warwick is secretary and treasurer of this society, whose offices are in the Engineers' Club Building, 1315 Spruce street, Philadelphia.

NEW OFFICES AND WAREHOUSES FOR MUEHLSTEIN

A more advantageous site and more commodious quarters for both offices and warehouses have been recently secured by H. Muehlstein & Co., dealer in scrap rubber and importer of plantation rubber, with connections in the Far East, as well as in London and Holland. With greatly increased facilities this concern is now enabled to supply crude rubber in all grades and positions.

The new offices of the Muehlstein company are in the recently-completed Liggett Building, at 42nd street and Madison avenue, New York, a very central location, with easy access to all transportation lines. These offices occupy an entire wing of the sixteenth floor, while the additional space permits an increased staff and the installation of a number of new office appliances.

The warehouses include an aggregate floor space of approximately 85,000 square feet and are situated on the waterfront at Hoboken, New Jersey. A railroad siding connecting with the Hoboken Shore Road affords excellent shipping facilities.

The headquarters at New York maintain close communication with the branches at Chicago, Akron, and Boston, and all work hand in hand in the buying and selling of both crude and scrap rubber. In this way the scope of the concern is extended to all rubber factories throughout the country.

Herman Muehlstein, who has been actively connected with the rubber business in all its departments for twenty-three years, is president of the company. He is naturally proud of the enlargement of his organization, but believes much of the company's success is due to the cooperation of rubber manufacturers, through whose instrumentality the present developments have been made possible.

"Who's Who in the Fisk Building"

Prospective occupants of the Fisk Building, a new and important structure which occupies a commanding position at Broadway and 57th street, New York, N. Y., include several rubber firms.

The largest single engagement for space here has been recently made by the Kelly-Springfield Tire Co., who will occupy the fifteenth and sixteenth floors, or approximately 40,000 square feet. Here the executive offices of the company, and all its various departments, will be located probably before May 1.

Other new arrivals will be the Jenckes Spinning Co., Pawtucket, Rhode Island, and Brander & Curry, representatives of tire fabric mills. The latter company has signed leases for a large suite on the Broadway frontage, while the Jenckes company, with H. P. Babcock as manager, has moved into Suite 809. The Eastern Cushion Wheel Co. has also opened offices for its eastern territory in Room 410. Other rubber companies located in this building are The Fisk Rubber Co., the Federal Rubber Co., the Kokomo Rubber Co., and The New England Tire & Rubber Co., Inc.

CONVENTION OF NATIONAL ASSOCIATION OF PURCHASING AGENTS

Plans have been completed for the seventh annual convention of the National Association of Purchasing Agents, 1408 Kimball Building, Chicago, Illinois, which exposition will be held at Rochester, N. Y., May 15-20, 1922. Products of all kinds, which its members buy, will be shown, and a large number of exhibit spaces will be provided for manufacturers who wish to take advantage of the opportunities offered by the "Informashow" for the display and probable sale of their goods. Felix Mendelsohn is managing director of the exposition.

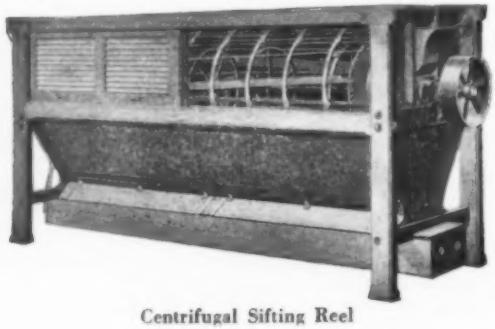
Handling Compounds in a Rubber Mill

Accurate and Systematic Methods of Handling Compounds Have Far-Reaching Results

THE original compound room of the old-time rubber mill was the darkest and dirtiest corner in the mill room. As this was before the days of central stores, barrels of compounding ingredients were brought directly to the compound weigher, the heads knocked in, and the contents scooped out as desired. The weighing was done on one scale, which was rarely if ever verified and the same scoop was used for everything from white lead to barytes. Since the compounds of that day were like grandmother's receipts and subject to variation at the whim of the mixer, this type of compound room filled all the requirements. If a batch was spoiled it was doctored up and graded down into heels or matting, not so much through a dishonest intention of "covering up," but because the management offered no other solution and therefore could expect none.

However, strange as it may seem, the compound room of the rubber mill has been the last department to fall in line with modern ideas and become systematized. Manufacturers have spent thousands of dollars for laboratories and chemists to perfect their compounds and make their product uniform, and yet have left the fate of the quality of their goods in the hands of some ignorant laborer shoveling out compound with a flour scoop.

The laboratory develops a new compound. The sample, mixed and weighed to the fraction of a gram on a balance scale, warmed up and calendered on the experimental mill, tests well. Turn it loose in the mill and what happens to make it go wrong? For the rubber manufacturer knows that after his goods go out to the trade and are on the shelves for six months, some will bloom like ice crystals in Alaska, others will not; some check and crack in the sunlight, others age perfectly; some soften, others become hard and stiff. But the fact remains that they are all the same compound and put through the same processes. What can happen to it in the factory to cause these variations? Immediately the chemist asks: "Was my compound weighed and mixed properly?

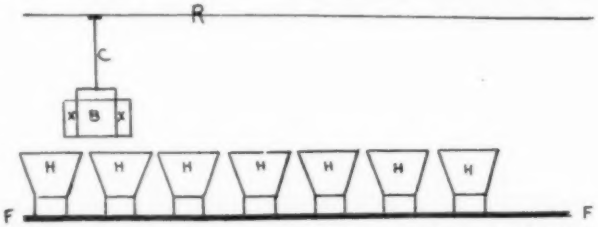


Centrifugal Sifting Reel

How do I know but the weigher has mixed the powders of one compound and the rubber of another?" And so on—. Such sloppy methods in the compound room make the chemist lose confidence in his work and offer him an alibi.

If the manufacturer happens to be a rubber man of the old school, he may call his chemist into the private office and converse with him as follows: "Years ago we had no chemists and no laboratories, we measured compound by the scoopful and rubber by the yardstick, but we made good hose and good belts. Why can't we do it today?" The manufacturer is looking back to the old days through rose-tinted glasses and forgets that automobile tires are now built to travel 10,000 miles instead of 2,000, and automobiles run 60 miles an hour instead of 15, that the steam fire engine has replaced the horse. But if he wants an answer to his lack of satisfaction with the present-day standard of his product, it's ten to one he will find it in that darkest corner of the mill room where the mixing man shovels compound.

When the tire industry came into the field as a big factor, the engineers and chemists did not trust to slipshod methods for carrying out their plans and formulas. Here can be traced the beginning of modern methods of handling compounds. Gradually the mechanical, druggists' sundries, and footwear plants are changing their systems to conform to the methods adopted by the tire industry, rubber's youngest and most efficient offspring.



C—SLIDES ALONG RAIL R OVER HOPPERS H; BARREL B CARRIED BY SUPPORTS X; BARRELS LOWERED WITH HEAD NEAR RIM OF HOPPER; BARREL THEN TILTED SAVING LABOR OF SHOVELING POWDER INTO HOPPERS

Loading Arrangement for Hoppers—Second Floor

Location of the Compound Room

The ideal location for the compound-weighing room is on the same floor as the mixing mills with equal space on the floor above for the storage, drying, sifting apparatus, and the chutes. The weighing room should be separated from the mixers by a partition and equipped with suitable ventilation apparatus to make working conditions as nearly ideal as possible.

The compounding ingredients are stored on the second floor which is equipped with dry kilns for keeping the ingredients free from moisture. Most powders are shipped in barrels and bags with more or less leakage.

Floor sweepings from the compound room, which with the best of care will amount to considerable in a week's time, can be analyzed and used in matting, cheap heels, rag stock for flaps, etc. If sifting apparatus is used it should be located on this floor. Many rubber mills are now using special sifting reels to remove dirt and foreign substances from whiting, zinc oxide and other largely used ingredients. These are extra precautions which pay dividends by eliminating blisters in the finished product.

After drying, sifting, and testing, the powders are placed in a series of hoppers or chutes which have their outlets in the weighing room below. Each chute is numbered, labeled, and locked. Dumping the powders into the hoppers can be accomplished more effectively if the department is equipped with an overhead rail with chain and fall. Time and labor are saved in this way as the entire contents of the barrels can be emptied at once and the old-fashioned hand method of scooping materials from the barrels is eliminated.

Arrangement of Bins

The arrangement of the compounds calls for sound planning. At first thought it would seem advisable to separate colors to

prevent mixing ingredients which look alike to the untrained eye, such as whiting, barytes, and lithopone. But, on the other hand, if the lithopone bin is placed next to litharge, all kinds of trouble may be caused by traces of litharge getting in the lithopone which is used in white compounds. While if the whites—lithopone, barytes, and whiting—are placed side by side, no particular harm will take place if, for example, a few ounces of barytes gets mixed with the whiting. The following arrangement is a typical and logical one: (1) whiting, 2 chutes; (2) barytes; (3) zinc oxide; (4) lithopone; (5) lime; (6) magnesia; (7) litharge; (8) chrome yellow; (9) chrome green; (10) iron oxide; (11) cumar; (12) rosin; (13) lampblack; (14) carbon black; (15) ultramarine; (16) MR; (17) sulphur. Substances like blue lead, white lead, accelerators such as thiocarbanilide, etc., should be kept in separate containers, preferably metal barrels, rather than chutes. If white lead is used it must be kept away from the other whites as disastrous results will occur if it is mixed in the wrong compounds. Yet there is probably no rubber mill in the country where this mistake has not occurred at some time in its history and made white raincoats turn black in the cure. Separate scoops, properly labeled, must be used for each class of material.

Handling compounding ingredients commences when the foreman of compounding draws up his list of materials which are brought from the stores and placed in front of the proper chutes. He then unlocks each hopper separately, dumps in the powders, and relocks the chute. These precautions may seem unnecessary, but it is the strict observance of them that lessens the chances of error. Having received from the central planning office the number of batches of each kind to be mixed, the foreman can readily compute from his compound cards the number of pounds of each ingredient needed. Largely used powders such as whiting can be drawn by the bag or barrel and put in the chute up to capacity to save rehandling and eliminate bookkeeping.

Weighing the Batches

Before commencing to weigh out the batches the weigher is given a compound ticket showing the number of the compound, mixing mill number, and the number of pounds of each ingredient. The compound pans are about 3 feet square, 1 foot in depth, and are checked once a week, as their weights vary owing to the adhesion of tar and oils. After the weight of the pan is checked, it is placed on a movable truck or four-wheeled car which carries the scale on a track in front of the chutes. A conveyor runs parallel to the track to transport pans of compound after they have been weighed. The order of the compounds on the ticket is made to correspond with the arrangement of the bins, so that the weigher takes them in the same rotation and is less liable to error. Thus, a compound containing the following ingredients would be arranged in this order according to the above lay-out of bins; whiting, 42; zinc oxide, 8; lime, 2; litharge, 7; sulphur, 2.

The scales, which are of the dial type, are equipped with adjusting bars to allow for the weight of the pans. Each ingredient is weighed separately in the pan in the bottom of the chute and then dumped into the compound pan. In this way, if the weigher discovers he has weighed out too much or too little compound he can rectify the mistake without spoiling the batch. The pans are marked with the compound numbers on metal disk tags fastened securely to the handle with wire. This eliminates possible mistakes due to inaccurate chalk scrawls.

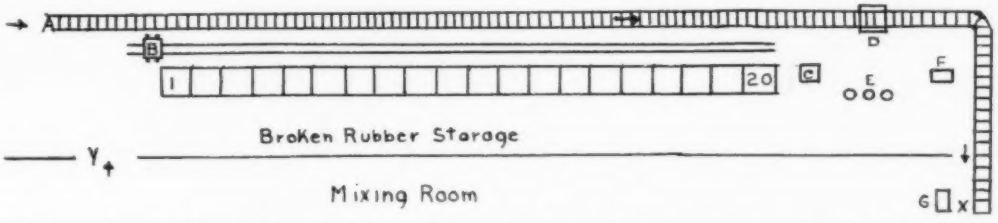
The heavier ingredients are weighed on No. 1 scale, whereas sulphur, accelerators, etc., are balanced on a smaller and more delicate scale. As a group of ingredients is placed in the pans they move along the conveyor in rotation. Sulphur is not dumped in with the rest of the powders but is placed in special small, round pans 6 inches in diameter and 9 inches deep.

The compound is then checked at No. 3 scale and the oils and greases added. A list of the check weights of batches is posted here and the total must not vary beyond a specified tolerance.

CONSOLIDATED COMPOUND SHEET

Stock No.	Whiting	Barytes	Litho-pone	Magnesia	Zinc	MR	Sulphur	Litharge
1	3	...	...	...	...	5	2	2½
2	...	...	...	2½	...	7½	2½	...
3	...	15	15	3	...	4	3	...
4	...	...	...	4	23	5	4	5

The stocks and ingredients are listed as shown by the above sample. When the daily mixing ticket is received, the compound foreman or his clerk calculates the necessary amount of each. The list of weights is given to the man who fills the hoppers.



A, CONVEYOR; 1 TO 20, COMPOUND BINS; B, SCALE ON TRUCK; C, SCALE FOR SULPHUR, ACCELERATORS, ETC.; D, CHECK SCALE FOR COMPOUNDS; E, OIL SECTION; F, SCALE FOR RUBBER, RECLAIMS, ETC.; G, CHECK SCALE FOR TOTAL WEIGHT; X, LOADED TRUCK TO MIXING ROOM; Y, TRUCK WITH EMPTY PANS TO COMPOUND ROOM.

Compound Room Lay Out

The handling of oils and greases is a problem, which, if not managed properly, can make the compound room a very sloppy and untidy place. Oils such as linseed, rosin oil, and tar are kept in 60-gallon metal containers, that for tar being equipped with a steam coil, and are removed with 2-quart dippers or from faucets. This avoids leakage and sloppiness and in the case of linseed oil and petrolatum effects a saving of valuable materials. Palm oil, petrolatum, and other greases are best removed with a common trowel.

The pans then proceed to the rubber weigher. Rolls of broken down rubber or combinations of different grades milled together to a certain consistency and softness are aged 48 hours before mixing. These are trimmed off to the weight called for, likewise the reclaimed rubber which comes in slabs from the mill, or tubes from the refiners. Paraffine and mineral rubber are also added here when the compound is complete and ready for the mixing mill.

Check-Weighing the Batches

Before the compound is thrown on the mill it must be weighed and checked again by an inspector. This requires accurate weighing apparatus which should be checked daily. Dirt is a great foe to accurate weighing and there is plenty of it in the compound room to clog up the scales. Platforms should be inspected and all accessible parts dusted thoroughly every day. A set of standard check weights should be used to check the scales. This work should be done by the laboratory.

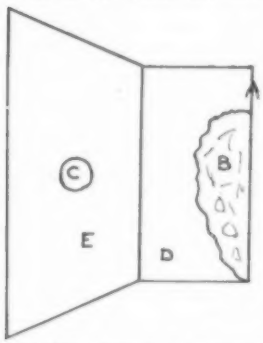
The dial scale, graduated into pounds and fractions of pounds to correspond with the units used in the compounds, is generally the type used, but its advantages of being more easily read and more nearly accurate than the beam type of scale may be lost if the dial scale is not given proper care. Mill practice has found this type a delicate instrument despite its other advantages and it must be handled accordingly.

In checking the entire batch it is important that the limit of tolerance be established. Reject all underweight batches and accept all that do not exceed one pound overweight, on the theory that if nothing is left out a slight overweight will not affect the batch. A fifth weighing after the batch has been mixed completes this cycle of procedure. Rejected batches are mixed as usual and samples sent to the laboratory where they are analyzed and a use determined. Sometimes more ingredients are added while very often these batches are used as a base for other compounds. Another very excellent precaution against wrongly mixed compounds is to have the different weighings taken by different men. Thus, one man weighs the dry ingredients, another the oils, another the rubber and reclaim; the foreman, the check weights and completed batch in the compound room; the inspector, before and after mixing.

The type of individual best suited to weigh out compounds is a matter which should be gone into thoroughly. An unemotional, stolid, reliable routine type, is best fitted for this work, and the wages must be high enough to attract the right man, for it is a disagreeable, exacting, and dirty job.

Safeguarding the Worker

Health conditions are now partly governed by law in some states. Every man who handles certain accelerators such as aniline and its derivatives must take a shower bath and effect a complete change of underclothing after his day's work is done. If the mill is not already equipped with showers for the men they should be installed, especially for the mixers and compound men. The use of respirators to prevent the constant inhaling of the powders is a wise precaution against lead poisoning, which is more or less a problem with rubber manufacturers. Goggles should be worn to protect the eyes from thiocarbanilide and fine particles of compound which have a tendency to make the eyes of workmen sore.



A, Wire Screen; B, Sponge; C, Metal Cap and Diaphragm; D, Metal Covering; E, Rubber Covering

Respirator

Aside from their health value these measures improve working conditions in the compound and mixing rooms and tend to make them better and more fit for human beings to work in. This attracts a better type of workman who will pay dividends with every accurate batch he weighs out and mixes.

The installation of an accurate and systematic method of handling compounds will have even more far-reaching results. The chemist will regain confidence in the work of the mill and can gage the true worth of his compounds with greater accuracy knowing that their execution has been according to standard practice and checked.

In the tire industry every batch mixed is tested in the laboratory before it is released for use. This is the modern method of insuring that every ounce of material in the finished product is up to specification. While this rigorous testing may not be necessary in other branches of the industry, it is a good insurance that when the goods go out to the dealer they are as nearly right as human hands and machines can make them.

REPAIR OF RUBBER FOOTWEAR

The manufacture of rubber footwear antedates pneumatic tires by many decades, yet rubber boot and shoe repairing was scarcely practiced except for occasional patching with rubber cement by leather shoe cobblers. Such repairing is naturally ineffective, so much so that leaky rubber footwear is generally scrapped as worthless.

Diligent study by a practical shoemaker who realized the possibilities, finally revealed a practical means for applying the

The Arthur Footwear Vulcanizer and the Inventor

basic requirements of heat and pressure for vulcanizing internally and externally on the diversified forms, sizes, shapes, construction and materials of rubber boots and shoes[1].

Owing to their simpler form and greater individual cost, the systematic repair and vulcanization of pneumatic tires began shortly after such tires became generally used, perhaps as early as 1893.

The first apparatus for repairing rubber footwear by hot vulcanization, by J. W. Arthur, dates back to 1911. The development thus begun resulted in another patent[2] in which improvements were specified for applying heat internally and externally and for the use of clamps and pressure bands.

For vulcanizing on soles the necessity for employing molds was obviated by the use of sheet lead bent to fit the bottom of the boot or shoe, and held in place by a pressure clamp. Sheet lead is now superseded by steel wire cloth to secure a roughness on the sole resembling the original knurling. The patching device can be set and pressure applied by a pull upon the pressure band at any angle.

The latest machine occupies a space about three feet square and may be piped up in conjunction with tire-repair vulcanizing equipment as another unit.

Heat is applied internally to the repair by means of hollow horn-like castings of suitable form through which steam is circulated.

The illustration pictures some of the means employed for internal heating and sole clamping, as well as the general assembly and operation of the equipment.

[1]The India Rubber World, March 1, April 1, May 1, 1921.
[2]J. W. Arthur, United States patent No. 1,157,751.

What the Rubber Chemists Are Doing

Tetrabromide Method for Estimating Rubber Hydrocarbon[1]

By Harry L. Fisher, Harold Gray and Ruth Merling[2]

THE tetrabromide method is the oldest method for estimating rubber hydrocarbon. As originally described[3] it consisted of the preparation of the rubber tetrabromide in solution, precipitation with alcohol, washing and drying, and determination of the bromine in the product. Several modifications followed, mostly in the methods of preparation and of determination of the bromine in the precipitated sample. The latest modification of the method has been made by W. K. Lewis and W. H. McAdams, who applied the method of McIlhiney for the estimation of unsaturated oils by means of bromine in an organic solvent. Briefly, the rubber is dissolved in carbon tetrachloride and treated with a solution of bromine in the same solvent. After standing from two to four hours the excess of bromine is titrated with sodium thiosulphate after the addition of a solution of potassium iodide, using starch as the indicator. Since substitution always takes place, as shown by the presence of hydrogen bromide, the amount of bromine used, as determined by titration, does not give the correct figure for the amount actually added to the double bonds. This is remedied by immediately adding some potassium iodate solution which converts the hydrogen bromide into bromine. This bromine, as in the previous case, reacts with the potassium iodide to give iodine, which is titrated with additional sodium thiosulphate. By subtracting twice this latter amount from the total bromine determined by the first titration, the true value of bromine addition is obtained.

There is no doubt but that this titration method is theoretically correct, so far as the chemistry of rubber is understood. The present authors have tried out this method in a sympathetic manner, with the full expectation that excellent results would be obtained. They have been somewhat disappointed in its workings although they believe that it will eventually be of good service.

The authors, after an extended discussion of the errors to which the above method is subjected, submit the results of their study in the form of a new method of analysis by bromination as follows:

The Complete Method

The complete precedure of Lewis and McAdams, together with our modifications and corrections, is briefly as follows:

Solvents and Solutions

Acetone. This should be freshly distilled over anhydrous potassium carbonate, the fraction coming over from 56 degrees to 57 degrees C. being used.

Carbon Tetrachloride. Purify by subjecting to the action of saturated chlorine water for several days in diffused daylight or by placing the mixture on a shaking machine for six hours during the day. Wash thoroughly with distilled water, dry over lime, and distil. Use a one degree fraction.

Bromine Solution. 0.5 normal solution in purified carbon tetrachloride.

Sodium Thiosulphate. 0.25 normal solution.

Potassium Iodide. 20 per cent solution.

Potassium Iodate. 5 per cent solution.

Starch. Soluble.

Tetrachloroethane. Purified in the same manner as the carbon tetrachloride. Boiling point, 147 degrees C.

Alcoholic Sodium or Potassium Hydroxide. Normal solution.

For Raw Rubber

Extract the weighed sample, not over 2.0 g., in a standard extraction apparatus[4] with 60 cc. of acetone continuously for eight hours. Aspirate dry carbon dioxide through the extracted sample to remove the traces of acetone or transfer it on a watch glass to a desiccator and allow it to stand over concentrated sulphuric acid under reduced pressure. Dissolve the complete sample in about 250 cc. of purified carbon tetrachloride, with frequent shaking, slightly warming the solution on the steam bath if desired, in order to hasten solution. In the latter case be sure not to allow any moisture to get into the flask. Make up to exactly 500 cc. in a calibrated flask.

To a 50-cc. portion of the rubber solution in a 250-cc. glass-stoppered Erlenmeyer flask add from a buret 30 cc. of the standardized 0.5 normal bromine solution (150 per cent excess of bromine above that necessary for addition—in this case the 30 cc. is calculated on 0.2 g. of rubber hydrocarbon), stopper tightly, carefully mix by gentle rotation, and set aside in a dark closet at the ordinary temperature for 2.5 to 3.5 hours. Before removing the flask from the dark, cool by immersion for several minutes in ice water. Then, in a darkened room, attach a soft rubber tubing, 1 inch wide and 1.5 inch long, to the top of the flask and pour in 15 cc. of 20 per cent potassium iodide solution. Loosen the stopper and allow part of the solution to run in, shake gently, allow the remainder to run in, and wash with a stream of water. In this way no hydrogen bromide is lost. Still in the darkened room, titrate the free iodine that is formed with 0.25 normal standard thiosulphate solution, using starch paste as an indicator. Rotate gently at first, add a slight excess of thiosulphate, stopper, and shake vigorously, add enough bromine solution to color the mixture, and complete the titration rapidly with more thiosulphate. In order to determine the amount of substitution, add 10 cc. of five per cent potassium iodate and titrate again with thiosulphate as above, adding an excess, etc. The total time of titration will take from eight to 20 minutes, depending largely on how well the emulsion settles out. Violent shaking is necessary in order to remove the bromine which is occluded in the lumps of tetrabromide.

Run a blank determination at the same time in order to determine the bromine under similar conditions and to eliminate any error caused by impurities, etc.

Sample calculation. Equivalent weight of rubber hydrocarbon $(C_{10}H_{16})n = 34$. Thiosulphate solution = 0.230 normal.

Sample of rubber	0.2078-gram	
Blank titration	61.06 cc.	thiosulphate
First titration (excess of bromine)	28.65 cc.	thiosulphate
Bromine consumed	32.41 cc.	thiosulphate
Twice second titration (after proper subtraction of bromine used in excess)	6.22 cc.	thiosulphate
True addition	26.19 cc.	thiosulphate

$$\frac{26.19 \times 34 \times 0.230 \times 100}{0.2078 \times 1000} = 98.58 \text{ per cent}$$

For Vulcanized Rubber

Extract a weighed sample (approximately 1.5 to 2.0 g.) of vulcanized rubber with acetone for eight hours in the standard extraction apparatus, evaporating the acetone to obtain the percentage of acetone-soluble material. Remove the acetone from

[1] The greater part of this paper was given in the symposium on analytical chemistry before the Rubber Division at the 60th meeting of the American Chemical Society, Chicago, Illinois, September 6 to 10, 1920. The work on vulcanized samples has been completed since that time.

[2] Research Laboratories, The B. F. Goodrich Co., Akron, Ohio.

[3] Th. Budde, "The Valuation of Cold Vulcanized Rubber Ware by the Tetrabromide Method," Apotheker-Zeitung, 24, 529; Chemical Abstracts, 3, 1909, 3013.

[4] Journal of Industrial and Engineering Chemistry, 9, 1917, 314. Use a hardened filter paper.

the residue as indicated above, dissolve the complete sample[3] in 100 cc. of purified tetrachloroethane by refluxing for four hours, cool, and make up to mark in a 250-cc. calibrated flask with purified carbon tetrachloride. Remove a 25-cc. aliquot portion by applying gentle suction to a pipet containing a small piece of cotton in its tip, deliver into a 250-cc. glass-stoppered Erlenmeyer flask, and proceed with the addition of bromine, as above. In this case only 100 per cent excess of bromine, calculated on the sample used, is necessary, since there is a smaller amount of the original rubber hydrocarbon present in the vulcanized material.

Determine the combined sulphur in the sample by evaporating an aliquot part of the tetrachloroethane solution and determining the sulphur in it.

Calculations for Vulcanized Rubber. The rubber hydrocarbon combined with the sulphur is found by multiplying the percentage of sulphur by the molecular weight of the rubber hydrocarbon (136) by that of two molecules of sulphur (64) = 2.13. The total rubber hydrocarbon is then calculated by adding the percentage of rubber hydrocarbon combined with the sulphur and that of the uncombined rubber hydrocarbon found from the bromine addition.

Summary

1. The precipitated tetrabromide occludes bromine which is only very slowly removed during the titration.

2. An improvement is suggested in the manner of titrating the bromine.

3. Emulsions are often formed during the titration which are sometimes very difficult to break. The heavier the emulsion, the greater the discrepancy in the results. The authors were unable to break the emulsions every time and are unable to tell how to avoid them. Chloroform, which is a good solvent for the tetrabromide, was tried, but although no precipitate came down, emulsions were formed.

4. Two errors in the original articles are pointed out, relative to the amount of potassium iodide used.

5. The results of several analyses of purified rubber are given, which show differences from 0.15 to 24.27 per cent.

6. If vulcanized samples are treated with alcoholic sodium hydroxide in addition to the acetone extraction, it is found that they do not dissolve in the tetrachloroethane within 3 days' heating. By adding lime to the solvent and rubber they can be dissolved in about 12 hours.

7. Titration of the hydrogen bromide with alkali has no special advantages over the iodate method described in the original article.

8. The method requires further study and elaboration before it can be used with accuracy.

[3] In case "factice" (vulcanized oil) is present, the extract sample should be boiled with 50 cc. of normal alcoholic sodium or potassium hydroxide for 2 to 4 hours, filtered by decantation through a hardened filter paper, washed with alcohol and dried over concentrated sulphuric acid under reduced pressure. The sample after this treatment will not dissolve readily in the tetrachlorcethane, but can be brought into solution by adding some lime and heating for about 12 hours instead of 4 hours.

Determination of Available Sulphur in Golden Sulphide of Antimony[1]

By B. D. Luff and B. D. Porritt

The term "golden sulphide of antimony" is applied to a fairly wide range of products varying in shade from a golden yellow to a deep orange, and in composition from nearly pure trisulphide to a compound containing a relatively high percentage of the pentasulphide, while calcium sulphate and free sulphur may be present to a greater or lesser extent, according to the method of preparation.

The pigment, as usually marketed, contains free sulphur in varying proportions, the percentage content of each particular brand being stated by the maker. When this color is used for preparing rubber mixings the manufacturer, when calculating the amount of sulphur necessary for vulcanization, must take this free sulphur into account. Thus a determination of free sulphur is necessary.

[1] Journal of the Society of Chemical Indutsry, December 15, 1921, 275 T.

Stability of Antimony Pentasulphide

The question of the stability of antimony pentasulphide has an important practical aspect as, if there is a tendency for sulphur to be eliminated at temperatures below 100 degrees C. (212 degrees F.), there will be a greater likelihood of this occurring at a higher tempertaure, for example, that of vulcanization. In this case the sulphur so liberated will be available for effecting vulcanization and must therefore be taken into account.

Hitherto much difference of opinion has existed regarding the possibility of antimony pentasulphide itself furnishing the sulphur necessary for vulcanization. Investigation by the authors has shown that heating beyond 125 degrees C. (257 degrees F.) results in the liberation of sulphur, the amount increasing with the temperature employed. Experiments indicate that in golden sulphide the percentage of sulphur available for vulcanization will depend on the percentage of antimony pentasulphide in the sample. Weighed portions of a sample containing an appreciable proportion of pentasulphide were heated at 145 to 150 degrees C. (293 to 302 degrees F.), in closed tubes for 1, 2, 3 and 4 hours, respectively. The following percentages of free sulphur were obtained: After heating for 1 hour, 8.66 per cent; 2 hours, 9.55 per cent; 3 hours, 10.46 per cent; 4 hours, 11.81 per cent. Thus there is a gradual liberation of sulphur when samples containing pentasulphide are heated, the proportion of free sulphur available increasing with time of heating.

Summary

1. Carbon bisulphide, provided it be subjected to previous purification, is a satisfactory solvent for the removal of sulphur.

2. The accepted method of determining free sulphur in antimony sulphide by extracting the original sample with carbon bisulphide fails to take account (a) of any decomposition of the higher sulphide which occurs under the conditions employed for the vulcanization of rubber, (b) any sulphur present in the amorphous form, or (c) the pronounced fixation of free sulphur shown by certain samples of pigment between 120 and 150 degrees C. (257-302 degrees F.)

3. "Available sulphur" should be determined by extracting with carbon bisulphide after the pigment has been heated to 150 degrees C. (302 degrees F.) for five hours in a slightly alkaline atmosphere.

Reactions of Accelerators During Vulcanization. III—Carbosulphydryl Accelerators and the Action of Zinc Oxide[1]

The following extracts are from the paper of the above title by C. W. Bedford and L. B. Sebrell[2].

There seems to be a slowly but steadily increasing interest in the chemical reactions which organic accelerators undergo during the vulcanization of rubber. The chemistry of the sulphur reactions of organic nitrogen compounds has previously found its main application in the sulphur dye industry, and even after years of world-wide research it is still a desert, with here and there an oasis of definite knowledge regarding chemical composition or mechanism of reaction. Sulphur dyes are exhaustively sulphurated at high temperatures as compared with the use of the same or similar nitrogen compounds as accelerators in the vulcanization of rubber. Here we find a lower temperature and a lower quantity of sulphur as well as the use of shorter time, so that the chemistry of the first reactions of

[1] Presented before the Rubber Division at the 61st Meeting of the American Chemical Society, Rochester, N. Y., April 26-29, 1921.

[2] The Goodyear Tire & Rubber Co., Akron, Ohio.

nitrogen compounds with sulphur may be applied to accelerators.

We attribute the curing power of nitroso accelerators first to their oxidizing power, which will greatly speed the reaction of the sulphur with accelerator, rubber resin or rubber protein, thereby bringing the nitrogen in the rubber into quicker action as an accelerator. In this sense, therefore, nitroso accelerators are, first of all, secondary accelerators acting in the same manner as litharge. Nitrosophenol has this type of accelerating power and the fact that its reduction product is not a primary accelerator has no bearing on its action as a secondary accelerator.

The carbosulphydryl accelerators constitute the most important class of vulcanization aids known to-day. Thiocarbanilide is probably used in larger tonnage than the gross weight of all other accelerators put together. Other than thiourea derivatives, this class includes the thiurams, dithiocarbamates, mercaptans, mercaptides, disulphides and all accelerators which produce these or similar compounds during the vulcanization process. In considering the class as a whole, one cannot overlook the great effect that zinc oxide has on the curing power of these accelerators, and it soon becomes evident that the action of the secondary accelerator must be known before much can be done to explain the action of the primary accelerator.

Summary

1. The vulcanization of rubber by ammonium hydrosulphide has been explained by oxidation and the liberation of free sulphur from the disulphide. The loss of S_x from polysulphides has previously been proposed as the mechanism for vulcanization.

2. Metadiamines are differentiated from paradiamines by their sulphur reactions. *m*-tolylene-diamine forms stable disulphide-polysulphides to which its curing power is attributed.

3. Sodium phenolates form disulphide-polysulphides similar to the metadiamines and aniline.

4. Aldehyde ammonia is very rapid in its reaction with sulphur at or below curing temperatures, and forms ammonium polysulphide during vulcanization.

5. *p*-nitrosophenol is believed to function only as a secondary accelerator, acting in this manner similarly to litharge.

6. Zinc oxide or zinc mercaptides have been found necessary in all rubber cements which cure at room temperature.

7. Weak bases, such as aniline, will vulcanize a zinc oxide-carbon disulphide cement at room temperature, just like piperidine or dimethylamine.

8. In cements containing amine and carbon disulphide, zinc oxide is dissolved and the cement may take on the appearance of a pure gum cement.

9. A mixture of aniline and thiocarbanilide will dissolve zinc oxide at ordinary temperatures.

10. A mixture of aniline and thiocarbanilide will vulcanize a cement containing zinc oxide at room temperature, while either alone will not.

11. Zinc thiophenol and zinc ethylxanthate are given as two accelerators which are free from nitrogen or alkali and which function either in heat cures or in curing pure gum cements at room temperature. Zinc mercapto-benzothiazole acts similarly.

12. The ultimate mechanism of vulcanization by mercaptides and sulphur has not been discussed.

Effect of Mould on Vulcanizing Properties[1]

It is of the greatest importance to market sheet rubber in a clean condition as the presence of a slight surface mould causes a substantial reduction in the price of such sheet as against rubber free from mould.

Comment was recently made by an estate manager on the prevalence of mould on smoked sheets, while crêpe shows little or no tendency to go mouldy. In spite of all precautions he found that smoked sheets free from mould when packed showed mould after two or three months' storage in a good go-down, particularly on those sheets situated near the sides of the case. On the other hand, he found that pale, brown, and dark crêpe showed no mould at all. He concludes that smoke is not a fungicide, and does not prevent mould growth on rubber.

A sharp distinction should be noted between crêpe or washed rubber and smoked sheet which is not washed. With the former the serum is thoroughly washed out, and the substances on which the mould growth feeds are removed, or almost completely so. The rolling (machining) of sheets removes a great part of the serum, but not all, and sufficient foodstuff remains behind to carry a luxuriant mould growth. Smoke is an antiseptic and mild fungicide but not powerful enough to prevent the appearance of mould when the conditions are favorable to its growth. Practically any sample of smoked sheet will develop mould if kept in an atmosphere saturated with moisture at a suitable temperature. This also applies to "wild" rubber. The native methods of smoking are no more efficient than smoking in smoke houses, as pieces cut from a ball of fine hard Pará placed in an atmosphere saturated with moisture soon develop a growth of mould.

A vulcanizing test of samples of smoked sheet mouldy rubber showed the following results. These samples were (1) smoked sheet free from mould to serve as control; (2) mouldy sheet brushed, washed and resmoked for two days; (3) mouldy sheet brushed only and resmoked for two days; (4) mouldy sheet untreated.

Result of Vulcanizing Test

Samples	1	2	3	4
Breaking Strain	1240	1420	1320	1430
Final Length	968	972	997	985
Time of Cure, Minutes	218	199	208	203
Rate of cure per cent of standard	95	104	100	102

All samples were cured for 175 minutes. The lower figure for sample one resulted from the test specimen being hardly cured enough to produce the maximum breaking strain. Making due allowance for this, it is apparent that the samples are very similar, and cure at about the same rate. The small variations in rate of cure may be attributed to chance circumstances beyond control. We may conclude that the light surface mould had no effect on rate of cure, nor had the method employed to remove it. This confirms previous observations.

[1] Dr. H. P. Stevens in Bulletin of the Rubber Growers' Association, November, 1921.

CHEMICAL PATENTS

The United States

CELLULAR RUBBER. Cellular rubber is prepared by treating a rubber composition with nitrogen or other gas under pressure to effect occlusion of the gas, vulcanizing the material while subjected to the gas pressure, allowing it to cool and then heating it to cause the occluded gas to be discharged. Activated charcoal is used to promote the gas absorption.—K. H. Fulton, Pittsburgh, Pennsylvania. United States patent No. 1,385,044.

COMPOSITION OF MATTER. This comprises non-vulcanized rubber, a solvent of rubber and a small amount of acetone.—James H. Smith, Jr., Rutherford, and Clarence A. Wilson, Passaic, both in New Jersey. United States patent No. 1,398,979.

PROCESS OF MANUFACTURING CAOUTCHOUC-LIKE SUBSTANCES. These consist of melted resins with an addition of chloride of calcium. The molten mixture is repeatedly distilled with further addition of chloride of calcium in connection with chloride of lime. The oils thereby obtained are mixed with india rubber and subjected to the usual vulcanizing process.—Friedrich Graf de la Rosée, Garmisch-Patenkirchen, Germany, assignor by mesne assignments to The Chemical Foundation, Inc., a corporation of Delaware. United States patent No. 1,399,473.

WATERPROOFING COMPOSITION. This consists of paraffine, gasoline, benzol and rubber.—Otto H. Brauser and Miles H. Oakes.

assignors to The Waterize Chemical and Manufacturing Co.—all of Akron, Ohio. United States patent No. 1,399,724.

METHOD OF COMPOUNDING OF RUBBER PRODUCTS. In the manufacture of rubber goods containing a gel forming substance and a finely divided ingredient, the mixing method which consists in preparing an emulsion of the gel forming substance by means of a volatile liquid, mixing the finely divided ingredient therewith and then incorporating the whole into rubber.—Clayton Olin North, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,309,789.

ART OF COMPOUNDING RUBBER. In the process of incorporating glue into a rubber compound, the improvement consists in working the rubber in the presence of glue containing water insufficient in amount to plasticize it at ordinary temperatures but sufficient to do so in the working operation. William G. O'Brien, Akron, Ohio. United States patent No. 1,400,231.

CHEWING GUM AND PROCESS OF MAKING IT. A chewing gum composition containing a resin ester. Harry M. Weber, Bloomfield, New Jersey, assignor to Ellis-Foster Co., a New Jersey corporation. United States patent No. 1,401,452.

The United Kingdom

VULCANIZING RUBBER. An accelerator for use in vulcanizing is produced by synthetizing a carbon-bisulphide derivative of an organic base such as piperidine, upon a carrier such as the colloidal clay described in specifications Nos. 106,890 and 121,191, zinc oxide, French chalk, light carbonate of magnesia, or calcium carbonate. The product is ground and sifted. A mixture of 200 parts of rubber, 4 parts of sulphur, 4 parts of accelerator, and 5 parts of zinc oxide is vulcanized in about 5 minutes at 286 degrees F.—P. Schidrowitz, 57 Chancery Lane, and Catalpó, Ltd., 20 Holborn Viaduct, both in London. British patent No. 170,682.

SUBSTANCE FOR USE IN SELF-SEALING AIR TUBES. This consists of raw rubber previously heated and treated with or without a resinous substance and is characterized by the rubber being subjected, until it reaches a plastic and pliable consistency, to a masticating process in a hot mill at a temperature not sufficient to melt or burn it, for about two and one-half or three hours. The rubber may be mixed with a non-vulcanizing substance of a resinous and non-fibrous nature such as resin or Canada balsam. The substance may be incorporated in a tube by being placed in one or more layers between plies of unvulcanized rubber, after which the whole is formed into a tube and vulcanized.—C. R. Crombie, 22 Inverleith Place, and J. B. Smith, 15 Braid Hills Road, both in Edinburgh. British patent No. 170,925.

INDIA RUBBER COMPOSITIONS. India rubber latex from which some water has been removed is mixed with fibrous filling materials, pressed, rolled, or molded, and dried. The resulting sheets, tiles, or the like may be again rolled or pressed, and may be vulcanized. The filler for 100 pounds of prepared latex consists of 15 pounds of peat, 2 pounds of sulphur, 5 pounds of cocoanut fiber dust, and 5 pounds of cotton mill dust or finely divided cotton or wool waste, with or without 3 pounds of hair and 5 pounds of bark scrap. China clay, recovered rubber, and pigments may also be added. The latex may be sterilized by the addition of one-half per cent of carbolic acid or creosote, or one per cent of salicylic acid.—C. F. S. Bilbrough, Burnham-on-Crouch. British patent No. 171,046.

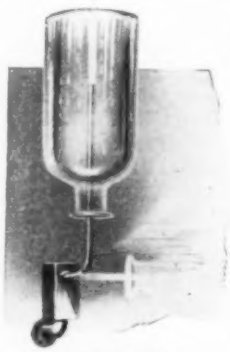
CHILE PREFERS AMERICAN INSULATED WIRE

Insulated wire used in Chile now comes mainly from the United States, whereas importations of this product were represented formerly by Germany. While English and Japanese wire is being offered in this market, the American make is more easily procured, and is also the desired medium-grade quality. No cotton-covered wire can be used, while all the rubber covering on wire for lighting must be at least 1/16-inch thick.

LABORATORY APPARATUS

Practical Laboratory Bottle Washer

A practical laboratory convenience is the bottle washer shown in the illustration. It is equally adapted for cleansing flasks, test tubes or other narrow-mouth containers. The water supply is easily controlled by raising the outlet pipe to the vertical position to turn it on and to the horizontal position to shut it off, as illustrated. —The Will Corporation, Rochester, New York.



Bottle Washer

Inks for Rubber Stamps[1]

Experiments made in the British Government Laboratory showed that of the materials commonly used as mediums or as thinners in rubber stamp inks, glycerine exerted no injurious effect on the stamp. While castor oil exerted practically no action on the rubber stamp, the thinners necessary to reduce it to working consistency, such as turpentine or its substitutes, caused disintegration of the rubber. Rosin oil, rosin spirit, and paraffine oil caused the rubber to swell, the former, however, producing a lesser softening effect than the other two.

[1] The India Rubber Journal, 1921, Volume 62, page 578.

Microscope Illuminator

The illuminator shown in the illustration appreciably enhances the usefulness and effectiveness of the microscope, rendering visible much structural detail which does not appear under vertical illumination. This applies to certain specimens of paper, textiles, insulating materials, botanical specimens, ceramic and rubber materials, etc.

The Silverman Illuminator

The illuminator is intended for use in microscopic work and photographing of opaque and semi-opaque objects. It consists of a circular source of light surrounding the objective and furnishing a diffused, uniform illumination directly on the spot to be examined. The source of light is a small, circular-tube, electric lamp held in place around the objective by a holder, the proper current being supplied from the electric lighting circuit through a rheostat. Dry cells or a storage battery can be used.—Ludwig Hommel & Co., 530 Fernando street, Pittsburgh, Pennsylvania.

NITROCRESOL ACCELERATOR

A new accelerator for vulcanization has recently been patented in France.[1]

The material is nitrocresol, which obviates the use of litharge and permits thin rubber sheets to be made in all tints. A sample mixing recommended for soft rubber is as follows: crude rubber, 100; sulphur, 10; nitrocresol, 0.5. This rubber will cure completely in 12 minutes at 130 to 140 degrees C.—268 to 284 degrees F.

For a good quality of ebonite: crude rubber, 100; sulphur, 40, and nitrocresol, 1, are mixed. Vulcanization takes place in two hours at 130 to 140 degrees C.

[1] French patent No. 505,701.

New Goods and Specialties

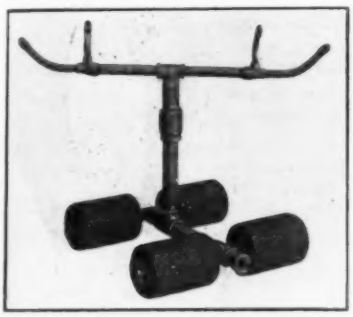
Another Standard Golf Ball

ONE of the golf balls brought out late last season in response to the new standard requirements is the Dunlop "162," tightly wound and standard in both weight and measurement, as are also its sister balls, the "Magnum" and "Durable." While the "Magnum" is more resiliently wound, the "162" is smaller and is offered as the best for first-class players under all conditions, as well as for middle-handicap players on good courses. It is characterized by extra long flight from the tee, steadiness on the greens, and unusual durability.—Dunlop Tire & Rubber Corporation of America, Buffalo, New York.

Dunlop "162" Golf

Rubber Rollers on Golf Course Sprinkler

A new type of rotary sprinkler for keeping the turf on the golf course in good condition is called the "Fairway." It is provided with four rubber rollers so that the turf will not be marred. These are arranged in two pairs connected by arms from the horizontal center tube to which the hose attaches. Just back of the outermost pair of rollers is attached the vertical tube carrying the sprinkler arms at right angles. The spread of these arms is 28 inches.



"Fairway" Golf Course Sprinkler

The total weight of the sprinkler is 14 pounds, its height is 19 inches, and the connection may be for hose either 1 or ¾-inch in diameter The "Fairway" has a capacity of 15 gallons of water a minute and will sprinkle an area of from 70 to 90 feet.—J. A. Tuthill, 7320 Hollywood Boulevard, Los Angeles, California.

Nursing Bottle Empties in Any Position

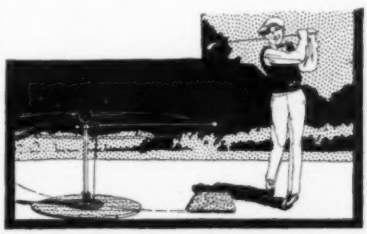
An all-rubber nursing bottle is one of the latest additions to the line of druggists' sundries, the only metal part being the monel metal clamp on the bottom, which is rust-proof and will last indefinitely, outwearing several rubber refill bottles. The bottle itself is seamless, molded in one piece. After being filled and having the clamp adjusted, the bottle is ready for use when the food is pushed up from the bottom until it reaches the nipple. It will remain there until the bottle is emptied, the bottom part collapsing during nursing. To clean, remove clamp and turn the bottle wrong side out. The nipple will not spurt or allow milk to run out if held downward, and the bottle requires no holding in any position to insure continuous satisfactory action.

Goddard Nurser

The same manufacturer makes ice and water bags, air cushions, etc., all having the same patented clamp fastener. In the case of the cushion this is in addition to the inflating valve.—Goddard Rubber Co., Fort Atkinson, Wisconsin.

Golf Anywhere

The "Golfmeter" solves the problem of the man or woman who wants to play golf anywhere, if there is room to swing a club. All parts except the cast iron base are highly nickeled. The machine stands 33 inches high and weighs 25 pounds.



Using the "Golfmeter"

Attached to a dial-operating mechanism revolving on ball bearings is a tethered golf ball. When hit it leaves the club face with great speed and, as it revolves, records the actual distance traveled. This device, used by both right and left-hand amateurs and professionals, shows the quality of the stroke and corrects it.—Craig Golfmeter Co., 51 East 42nd street, New York.

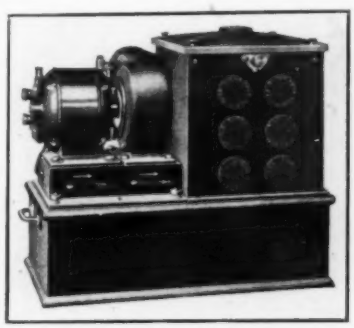
Cord Tire with Trussed Tread

The "Corduroy Cord" tire features a number of excellent points in connection with its construction and tread design, among which may be mentioned the truss work construction of the tread. There is a long center mileage strip connected to small blocks which form parallel strips on each side, as they are also connected to each other. This makes a broad tread surface. Over the sidewall is a series of graduated corrugations which provide additional protection at this important point. There is an extra heavy breaker strip and heavy duty cushion stock is used, while thick layers of rubber between the plies of cord prevent them from rubbing together. The bead is made of insulated braided steel wire and the inside of the casing is highly finished to prevent chafing on the inner tube. —Grand Rapids Tire & Rubber Corporation, Grand Rapids, Michigan.

"Corduroy Cord"

Hard Rubber in the Ozone Machine

Hard rubber has been found to be the most satisfactory material to use in the construction of the ozone machine, because other materials such as copper, glass, slate, etc., become decomposed, brittle, or soft and viscid, respectively.

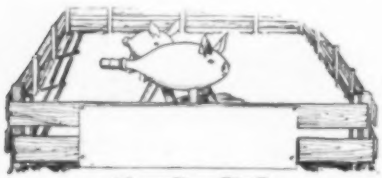


Ozone Power Plant

The ozone machine is used for various purposes, ranging from therapeutic application to the purifying of air in homes, factories, etc., and as a means of preserving foods free from putrefaction in large markets. In use the ozone within the machine may be combined with pinus or eucalyptus oil or other recommended or desired alleviative.—The NaPeer Tire Co., Apron, Ohio.

Novelty Adaptations of the Toy Balloon Idea

Toy balloon novelties, which appear to have struck the popular fancy, have appeared recently in many guises. Among them are the "Runaway Pigs" and the "Squealing Pigs" which have pointed pieces of heavier gray rubber cemented on to represent the ears and pointed pieces of wood for legs. The faces are printed on these balloons.



"Squealing Pigs"

"Cry Baby"

Then there are "Black Sambo," "Clown Doll" and "Cry Baby," the last illustrated here. These are similar to each other in construction, each being a balloon with a smaller upper end which forms the head when inflated. All are made in different colors and wear a collar of heavy fabric slipped over the head. "Black Sambo" is black with white features.

All of the above balloons have squawker ends and come packed in sealed envelopes. The manufacturer has other designs in preparation.—Anderson Rubber Co., Akron, Ohio.

Industrial Mask for Carbon Monoxide and Other Gases

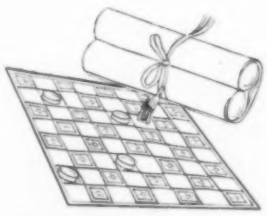
As a guard against the harmful effects of carbon monoxide and other injurious fumes and gases, a special mask has been brought out. The rubber parts are numerous and include: the face-piece, made of rubber with stockinette fabric covering; the head-bands, passing from the face-piece around the back of the wearer's head, made of elastic; a rubber deflector in the interior of the face-piece, comprising a two-branched piece of something resembling rubber tubing but specially molded to shape; an exhalation or flutter valve, like that used on the standard Army gas mask, but larger; the corrugated connecting tube from the face-piece to the canister, covered with stockinette, same as used on the standard Army gas mask; three rubber bands, one around the bottom opening of the face-piece, one around the upper end of the corrugated connecting tube, and one around the upper end of the flutter valve; two rubber corks, one in each opening of the canister; and, in the monoxide canister, a rubber cap over each protruding inlet and outlet.

Burrell All-Service Mask

This mask may be used with two different types of canisters, one a special carbon monoxide type to protect the wearer from carbon monoxide gas, and the other an all-service type to protect against acid gases, organic vapors, ammonia, and smoke, or combinations of these.—Mine Safety Appliances Co., 908 Chamber of Commerce Building, Pittsburgh, Pennsylvania.

Checker Set for the Traveler

Those who travel will appreciate the washable rubberized checker pad illustrated here, whether it be for their own use or for that of the children who weary of looking at scenery and beg for "something to do" while the train speeds along. The pad is accompanied by a set of checkers and can be rolled up and fitted into the case of French art morocco, which is lined with silk and tied with leather-tasseled silk ribbons. If desired, the owner's initials can be stamped on the case.—Mark Cross Co., 404 Fifth avenue, New York, N. Y.



Washable Checker Pad

An "Aristocrat" Out of the West

An interesting cord tire from the West is the "Savage Cord," called also the "Aristocrat." The carcass contains two more plies than the ordinary cord tire. The anchor strip looped around the bead and the two chafing strips of square-woven fabric are so constructed that the cord carcass is gradually stiffened as it approaches the hard bead, preventing any "hinge" and resultant blowouts above the bead. There is a bead cushion to protect against rim chafing. No adjoining plies have cords running in the same direction and every ply of cords is interlocked to hold the beads. The pure rubber friction around and between the cords gives elasticity. The sectional diameter is larger than that of the ordinary cord tire and the tread is an effective non-skid design giving traction, lateral stability, and speed.—The Spreckels "Savage" Tire Co., San Diego, California.

Savage Cord "Aristocrat"

New Designs in Rubber Balls

The ornamental features of the hollow balls illustrated are various in effect and method of production. In some instances a white rubber inlay bears an imprint in colors representing a fanciful or grotesque figure. In others, the material is a variegated mixture of different-colored rubbers in marbleized effects produced by calendering selected colored rubbers together. Some balls are of plain colored rubber, while the surfaces of others are covered with raised letters, animals, birds and other figures of instructive nature, mold-imprinted during vulcanization.

Group of Novel Balls

The ornamentation is permanent and the balls may be kept sanitary by washing. These toys are air-inflated and show live resilience.—The Miller Rubber Co., Akron, Ohio.

Pogo If You'd Be in Style

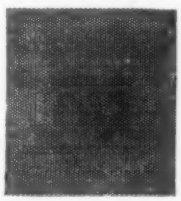
First introduced in Paris and London, the "Pogo" stick has now reached this side of the Atlantic and is being sold by sporting goods dealers and department stores, as well as by the company that controls the trade marks, patents, and selling rights in this country and Canada. If "pogo" was derived from the German *pogge* (frog), it is well-named, for a person who jumps on a pogo-stick resembles nothing else quite so much, unless it is a kangaroo.

Pogo Stick Detail

The stick, which should be about breast high for each individual using it, has a rubber cushion and a rubber pad at the bottom, foot-rests like those on the old-fashioned stilt, and a steel coil spring. It is possible to jump a considerable distance on one of these pogo-sticks, and even upstairs.—The Pogo Co., 35 East 10th street, New York, N. Y.

Hard Rubber Practical for Battery Separators

The need of the storage battery for some material to separate the metal plates without being acted upon chemically has resulted in the application of hard rubber to this use. The separator pictured here is perforated in staggered rows of holes, similar to the arrangement of honeycomb cells.—A. H. Lyons & Co., Stephen Girard Building, Philadelphia, Pennsylvania.

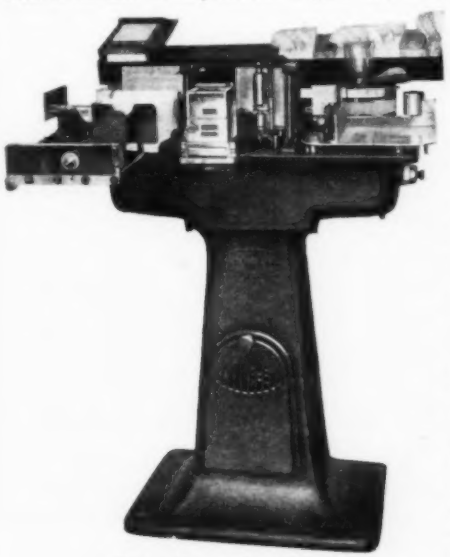


Lyons Separator

Do You Meter Your Mail?

The Pitney-Bowes postage meter answers the question, "How can our office seal, count, stamp, and mail its letters in 1/15 of the time it now takes to do it by hand, and assist Uncle Sam?" Instead of affixing the usual postage stamps, the postage meter imprints a postmark on each letter, interchangeable type being inserted to indicate the date and hour of mailing.

The small metal box in the center front of the picture is a register which is removed and taken to the postoffice, where any desired number of impressions is paid for, and the meter set at that number and locked. Each denomination requires a separate meter, printing in the color of the stamp it substitutes.



Pitney-Bowes Postage Meter

When the meter is returned to position, seven rollers and a driving belt from the electric motor, all of red rubber, feed the letters through for sealing and stamping in one operation. A double register shows both the number of impressions used and unused, registering only when it prints.

Metered mail goes directly to the sorting department of the postoffice and only one hour need be allowed between the time of mailing and that when distribution is desired.—The Postage Meter Co., Stamford, Connecticut; 342 Madison avenue, New York, N. Y.

A New England "Deliverer"

Although new and up-to-date in appearance, with its permanent velvet finish and its non-skid red rubber heel, the "Deliverer" rubber shoe, the manufacturer claims, has been delivering men in all walks of life from the inclemencies of the weather for 15 years. Yet the construction of this shoe is thoroughly modern in every way. It is made from a special rubber compound and tough fabric, with triple and quadruple reenforcing of the sole and back, has the usual lining, and an anti-skid sole and heel. The workmen who make this shoe work on it exclusively and make no other model. The "Deliverer" is being featured in newspaper advertising in Greater New York and other cities.—Firestone-Apsley Rubber Co., Hudson, Massachusetts.

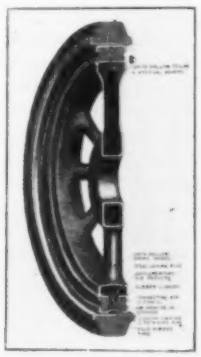
The "Deliverer"

Improved Check Valve for Toy Balloons

At first appearance this valve looks like the ordinary metal one having a narrow strip of sheet rubber fastened inside over the central circular opening. Its ingenuity lies in the method of manufacture. It is drawn out of a single piece of metal over a die so that a bead is formed at the angle where the upright side turns away from the horizontal portion or bottom. The strip of sheet rubber is automatically inserted between the die and the piece of metal before dieing so that when the bead is stamped it catches and holds the ends of the rubber strip.—United States Patent No. 1,360,178. Art Toy and Stamping Works, Inc., 77 Washington avenue, Williamsburg, New York.

The Smith Cushion Wheel

An improved type of cushion wheel is being produced by a manufacturer who, for some years, has been making wheels, without however this cushion as its distinctive feature. Under the new device there are four parts—the hollow spoked wheel; rubber cushion; steel locking ring, for locking the rubber cushion in place; and the retaining rim outside the cushion. An important item is the automatic air-cooling of the cushion by means of air passage-ways which run to all of the openings in the periphery of the hollow wheel. It is claimed that the Smith wheel is the lightest cushion wheel manufactured, and that its installation destroys vibration, injurious to both truck and driver. Standard solid or pressed-on cushion tires may be used on this wheel.—Smith Wheel, Inc., Syracuse, New York.



Smith Wheel and Cushion Features

Holiday Greetings, Calendars, Souvenirs

Calendars

E. M. & F. Waldo, manufacturers, importers and exporters of dry colors and white pigments, 11 Broadway, New York, N. Y., have issued a calendar with a quarterly arrangement, each of the four leaves showing an excellent map in colors of one of the divisions of the world.

A calendar with similar decoration is from Arthur W. Stedman, Inc., crude rubber brokers, with offices at 68 Broad street, New York, N. Y.

A large calendar, illustrating the various pumps and agricultural tools manufactured by F. E. Myers & Bro. Co., Ashland, Ohio, has, as a central figure in color, the representation of a young girl. A sketch of the company's extensive plant appears in an upper corner of the calendar.

The Oak Rubber Co., rubber toy balloon manufacturer, Ravenna, Ohio, sends a large and attractive calendar, in color, whose central feature is the head of a young girl.

An unusually large and practical calendar, with figures of a convenient size, and with holiday dates printed in red, has been prepared by the National Aniline & Chemical Co., 21 Burling Slip, New York, N. Y., dealer in colors, chemicals, and dyestuffs.

A calendar with a photographic reproduction of a picturesque old mill has been sent by J. H. Stedman Co., rubber manufacturer, South Braintree, Massachusetts. This firm has been issuing on its calendars a series of "Old New England" scenes.

Another large and useful calendar with slips, printed in color, has been sent us this year by the North British Rubber Co., Limited, Castle Mills, Edinburgh, Scotland.

From Akron, Ohio, comes a large and attractive wall panel, in color, on which the profile of a young girl appears. This was forwarded by the Electric Motor & Repair Co.

Also from Akron is another calendar, representing an Indian girl as the chief feature, sent by the Adamson Machine Co., manufacturer of rubber working machinery.

A useful memorandum desk calendar has been sent by the New Jersey Rubber Co., Lambertville, N. J., rubber reclaimers.

Cards and Souvenirs

Another little attractively-bound diary for 1922, containing some excellent maps and items of useful information, has been sent us this year by John Royle & Sons, Paterson, New Jersey, makers of special rubber machinery.

A leather bill folder, stamped with the recipient's name, has been sent by H. Muehlstein & Co., 41 East 42nd street, New York, N. Y., dealer in scrap rubber, and importer of plantation rubber.

Reichard-Coulston, Inc., 95 Madison avenue, New York, N. Y., importer and manufacturer of dry colors, sends a useful desk pad and calendar.

Attractive Christmas and New Year cards have been sent by the following: Condensite Company of America, Bloomfield, New Jersey; W. G. Brown, The Consulting Co., Cincinnati, Ohio; Pequanoc Rubber Co., Butler, New Jersey; E. H. Clapp Rubber Co., Boston, Massachusetts; R. W. Ashcroft, director of publicity, Ames Holden McCready System, Montreal, Canada; Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, Canada; Mitsui & Co., Limited, 65 Broadway, New York, N. Y.; Charles E. Wood, 287 Broadway, New York, N. Y.; Grow Tire Co., Boston, Massachusetts; T. C. Ashley & Co., 683 Atlantic avenue, Boston, Mass.; William E. Scheel, 159 Maiden Lane, New York, N. Y.; Edward B. Fulper, Trenton, New Jersey; and The Goshen Printery, 621 South Seventh street, Goshen, Indiana.

For all these kind remembrances we extend our hearty thanks, and assure the donors of our good wishes for their continued prosperity in the year 1922.

New Trade Publications

A PRELIMINARY CATALOG, WHICH SUPERSEDES ONE PREVIOUSLY issued, is being sent out by The Bristol Co., Waterbury, Connecticut, manufacturer of recording instruments. It includes various types of gages, recording thermometers and pyrometers, as well as many other instruments designed to estimate with absolute accuracy time, temperature, motion or speed. The present bulletin is descriptive of this company's round chart-recording electrical instruments, including voltmeters, ammeters, and wattmeters. These instruments are furnished to suit individual requirements, and can be used in connection with either alternating or direct current.

IN A RECENT BULLETIN ENTITLED, "RUBBER WORKING MACHINERY," issued by the Allen Machine Co., Erie, Pennsylvania, particular stress is laid on the proper lubrication of machinery and lubrication methods. Having specialized for a number of years in the manufacture of rubber machinery, this company is in a position to appreciate the heavy duty service and bearing pressures to which such machinery is subjected. Several types of the Allen calenders, mixing mills, gears, etc., are illustrated.

A NUMBER OF CATALOGS ISSUED BY THE HYDRAULIC PRESS MANUfacturing Co., Mount Gilead, Ohio, indicate the scope of this company's activities, which have steadily developed during the almost fifty years of its existence. The latest of these publications deals especially with hydraulic valves and fittings, and hydraulic equipment for every high-pressure purpose. The very complete catalog at hand contains 64 pages of illustrations, tables, and helpful information.

AN INTERESTING FOLDER HAS BEEN PREPARED AND DISTRIBUTED by the Industrial Department of Cross & Brown Co., New York, N. Y., real estate broker and agent, in order to facilitate the sale of a modern factory at 711 Northland avenue, Buffalo, New York, a plant having a spur connection with the New York Central railroad in the Humboldt Park section of the last-mentioned city. The factory building to be sold is a five and two-story structure, contains 100,000 square feet, and until recently was used for the manufacture of rubber tires.

The folder incidentally furnishes much information regarding the city of Buffalo, its industries, power and transportation facilities, etc., and mentions the fact that this city is the center of an industrial area containing approximately one-half of the country's population.

The Editor's Book Table

"HANDBOOK OF CHEMISTRY AND PHYSICS." BY CHARLES D. Hodgman, assisted by Melville F. Coolbaugh and Cornelius E. Senseman. Eighth edition. The Chemical Rubber Co., Cleveland, Ohio. Flexible cloth, 711 pages, 4¼ by 6¾ inches.

This excellent chemical and physical handbook for the chemist and chemical engineer comprises a wealth of data classified under the following sections: Mathematical tables; general chemical tables; properties of matter; heat; hygrometric and barometric tables; sound; electricity and magnetism; light; miscellaneous tables; definitions and formulas; laboratory arts and receipts; photographic formulas; measures and units; wire tables and chemical problems. The volume is well indexed.

"COTTON TRADE GUIDE AND STUDENT'S MANUAL." BY T. S. Miller, Sr. Third Edition, 1920. The E. L. Steck Co., Austin, Texas. Cloth, 6 by 9 inches, 448 pages.

As its title-page declares, this is a text-book showing operations of the cotton exchanges in connection with spots and futures historically treated; also a brief history of the industry and its development.

The work is divided into four sections treating respectively of classification or grading; the arithmetic of cotton solution of commercial problems; buying of spot cotton; cotton exchanges and the history of cotton. The book contains an appendix and

full index. It is unquestionably an indispensable source of information for the dealer and student of cotton.

"PROCEEDINGS OF THE TWENTY-FOURTH ANNUAL MEETING, American Society for Testing Materials, 1921." Published by the Society, Philadelphia, Pennsylvania. Cloth, 1197 pages, 6 by 9 inches.

This bulky annual publication gains in importance with each succeeding volume. It comprises, besides the Summary of the Proceedings of the Twenty-fourth Annual Meeting, the address of the president George S. Webster, and the report of the Executive Committee, many committees reports, tentative standards, and technical papers. Of special interest to manufacturers of rubber goods are: the report of Committee D-11, and the tentative specifications on insulated wire and cable; procedure for the analysis of rubber compound; cotton rubber-lined fire hose; wrapped and braided air hose for use with pneumatic tools; steam hose; rubber belting for power transmission; adhesive tape for electrical purposes; rubber insulating tape; rubber gloves for electrical workers; imperfections and tolerances for square-woven tire builder fabric, and definitions of terms relating to mechanical fabric.

"EMPLOYMENT METHODS," BY NATHAN W. SHEFFERMAN, consultant in personnel and employment management; formerly personnel manager for Lycoming Foundry and Machine Co., Baltimore Copper Smelting and Rolling Co., and C. F. Sauer Co. The Ronald Press Co., New York, N. Y. Cloth, 360 pages, 6 by 8¾ inches.

An interesting study of employment methods, recounting recent experiments and results obtained. The volume, divided into five parts, treats of the "Functions and Development of an Employment Department," "Getting Employes," "Holding Employes," "Employing for Office, Store and Bank," and "The Human Element." Particular stress is laid on the scientific employment methods which proved so successful during the war, and which have been, in a measure, retained by certain companies. Experiments along these lines which have been made by some of the well-known rubber organizations, are described at some length, while in the appendix an interesting account is given of the cooperative store, maintained by The Hood Rubber Co., Watertown, Massachusetts.

INTERESTING LETTERS FROM OUR READERS

Another Use for Rubber?

TO THE EDITOR:

DEAR SIR: The writer has given some thought to using rubber strips in our puttyless skylight. However, we doubt very much whether rubber would stand the test of time. We are rather inclined to believe that it would, within a few years, harden and crack.

As you may know, we use cow-hair felt for a glass rest. We have been manufacturing the "Anti-Pluvius" puttyless skylight now for eighteen years and we have only recently removed some of this felt from a few of the first installations we made and have found that the felt is in just as good condition as it was the day it was put in there.

If you think that rubber will last any such length of time, please advise the rubber manufacturers to correspond with us and we will go into the matter more thoroughly.

Bridgeport, Connecticut. THE G. DROUVÉ CO.

More About Ramie

TO THE EDITOR:

DEAR SIR: In the December issue of THE INDIA RUBBER WORLD, page 204, there is an article referring to the use of ramie as a substitute for cotton in the manufacture of tire fabrics.

The writer is well aware of the fact that one of the prime requisites of all tire fabric before it is put into a tire is that it shall be absolutely dry and contain no moisture.

It will be well for your friend to try a few experiments with dry ramie before attempting to offer it as a substitute. If such experiments have been conducted, the writer would be very pleased to know the results of the different tensile strengths at the various humidities.

New York, N. Y. INQUIRER.

We are reliably informed that several giant hemp cord tires have been in test service for over six months and are still on the road; however, the mileage will not be reported until the tires are worn out or fail.—THE EDITOR.

RUBBER TRADE INQUIRIES

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(962) An inquiry has been received for "Petrifite," used to prevent rubber from sticking.

(963) A manufacturer requires samples and prices on caoutchouc oil.

(964) Information is desired concerning the use of hemp cord fabric for pneumatic tire construction, including comparative test with 15-ounce cotton cord and summary of use in actual road test.

(965) A correspondent requests the addresses of manufacturers of small molded rubber goods.

(966) A subscriber desires to know the best accelerator to use in white sole shoe work.

Trade Opportunities from Consular Reports

Addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from the following district or cooperative offices. Requests for each address should be on a separate sheet and state number.

DISTRICT OFFICES

New York: 734 Customhouse.
Boston: 1801 Customhouse.
Chicago: 504 Federal Building.
St. Louis: 402 Third National Bank Building.
New Orleans: 1020 Hibernia Bank Building.
San Francisco: 307 Customhouse.
Seattle: 848 Henry Building.

COOPERATIVE OFFICES

Cleveland: Chamber of Commerce.
Cincinnati: Chamber of Commerce; General Freight Agent Southern Railway, 96 Ingalls Building.
Dayton, Ohio: Dayton Chamber of Commerce.
Los Angeles: Chamber of Commerce.
Philadelphia: Chamber of Commerce.
Portland, Oregon: Chamber of Commerce.

(491) A company in Canada desires to represent firms for the sale of fountain pens, refillable pencils, and other office supplies.

(527) An amusement company in Canada outfitting a new theater, desires quotations c. i. f. Canadian port on rubber matting. Cash.

(551) An agency for the sale of automobile tires and inner tubes is desired by a traveling salesman in Spain. Quote c. i. f. Spanish port.

Trade Lists Available

(FE-25032) On reference to this number, any of the offices of the Bureau of Foreign and Domestic Commerce will furnish a mimeographed copy of a list of importers of and dealers in motor cars, trucks, motorcycles, bicycles, tires, and accessories, in the Philippine Islands.

END OF A TROUBLESOME SUIT

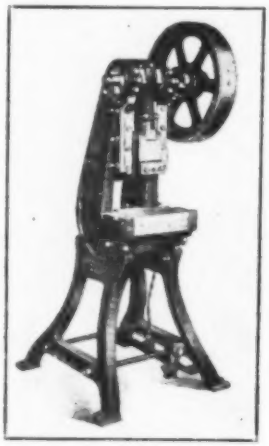
Through refusal, by the Supreme Court, to grant a writ of certiorari, applied for by the Metallic Rubber Tire Co., an end was made to a suit which has been continuing since August, 1898. Appeals and reappeals have been noted in various issues of the *Federal Reporter*. The question concerned a patented tire invention having wire imbedded in the tire tread, which invention was brought out by the Metallic company. It was alleged that this patent had been infringed by the Hartford Rubber Works Co., in the manufacture of the Midgley tread tire.

New Machines and Appliances

Inclinable Punch Press

Besides its standard uses in the machine shop or metal-working plant, a power punch press, particularly of the inclinable type, is adapted to the preparation of stock in rubber manufacturing.

The illustration shows a standard inclinable press of this sort which is successfully used to form the cup-like shells of gutta percha or balata for the exterior of golf balls. It is also used for stamping up tin or aluminum brands or labels for marking tires, hose, pump valves and other branded rubber articles, particularly when such brands are of large size as in the case of calender labels for railway air-brake or steam hose.



Press for Golf Ball Shells

It is substantially built and is provided with a positive knock-out in the slide and a treadle lock. —E. W. Bliss Co., Adams and Plymouth streets, Brooklyn, New York.

Top Cementing Machine

A new machine for cementing the uppers of canvas and rubber footwear for lasting has recently been placed on the market and is proving a valuable time and labor saver.

Footwear Cementing Machine

The old hand method of cementing with a scraper, often involving as many as twelve separate cementing operations before the upper is stitched, has always required a great deal of floor space and a large number of operators. Considerable cement is wasted, there is little uniformity in the result and the quality of the finished product is thus directly affected. Many racks and much space are required, due to the necessary rehandling of the stock, and the cemented pieces in the stitching room are inconvenient to handle causing expense to be added at this point.

With the new machine the entire cementing operation is performed after the stitching is done. A uniform width of cement is deposited along the margin of the upper at one handling of the shoe and the feed is so constructed as to cause the fabric to be thoroughly impregnated with the cement. The width of the cement line is variable to suit the needs of each manufacturer and the flow of cement can be varied at the will of the operator. A compact drying rack will take care of the uppers until the cement is dry enough to handle.

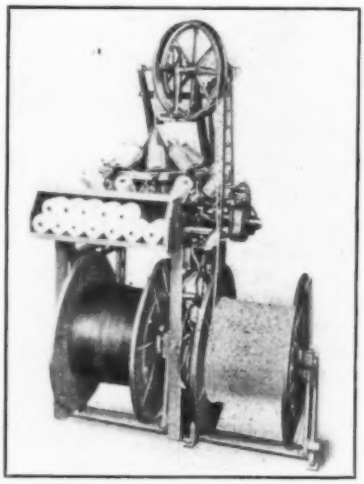
The machine method at once does away with all the rehandling of the uppers and the waste of cement, thus effecting a considerable saving in labor as well as floor space. As a result of cementing just prior to lasting, the cement is fresh and thus the lasting operation is facilitated and the quality improved. The machine is readily adaptable to piece work operation and a good operator can cement upwards of 1,500 to 2,000 pairs daily.—United Shoe Machinery Corporation, Albany Building, Boston, Massachusetts.

Machine for Slicing Bales of Friction Scrap

A rubber cutter of the hacksaw type, originally designed for cutting bales of plantation rubber, has been found to be well-adapted for slicing bales of pressed uncured tire friction scrap or similar adhesive scrap. For this service the machine is required to be of heavier construction than for cutting crude rubber. The increased strength and rigidity necessary is secured by making certain of the working parts from cast steel instead of gray iron. Cutters of this design are being employed by reclaimers with marked advantage.—Peerless Machine Co., Racine, Wisconsin.

New Type of Braiding Machine

Simplicity of operation and greatly increased production are among the advantages claimed by the manufacturers of a new invention for making cotton braiding to be used in the insulated wire and other industries. The principles involved are entirely different, it is said, from those formerly employed. In the new mechanism the bobbins, instead of passing in and out around each other, revolve rapidly in concentric orbits. One satisfied manager claims that "this new type of machine will do five times as much as the old machines with vertical spools."



Wardwell Rapid Braider

In operation this new invention is practically noiseless; its upkeep is small; while the uniform tension maintained during the braiding operation and the frictionless control of the yarns insure a superior quality of product. A number of stop-controls and triple-acting brakes secure practically instantaneous stopping and provide against accidents. All parts of the mechanism are easily accessible, while special devices lift the reels from their stands to the floor. An interesting feature also is the absence of overhead rigging. The new machines since their installation are giving satisfactory service at the plants of many well-known companies.—Wardwell Braiding Machine Co., Central Falls, Rhode Island.

Dry-Cure Retreading Kettle

Several improvements over already existing retreading vulcanizers are claimed by the manufacturers of this kettle, which

represents an innovation in dry-cure tire repairing. With the new device it is said that, instead of one tire, as many as four tires can be cured at a time, thereby securing a great saving in time and labor. Testimonials from satisfied users point out another advantageous feature—the curing of the whole tire at one time at 135 pounds steam pressure. Under the mold system, where the tire is cured in sections, there are lappings and joints, always a source of weakness.

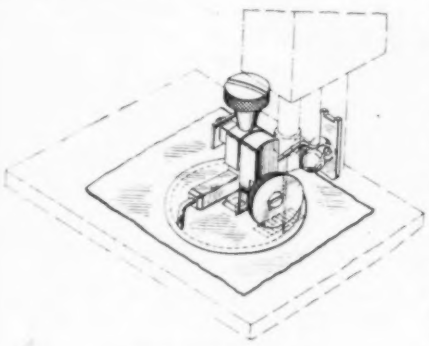
Sunlite Dry-Cure Retreader

The steam circulates through coils arranged inside the vulcanizer, and does not come in contact with the tires, all sizes of which can be cured in the kettle. The manufacturers claim that it will satisfy all the demands of tire repair men and that it will increase their sales and decrease their operating costs.—The Sunlite Co., McKinney, Texas.

MACHINERY PATENTS

Footwear Stitching Guide

The illustration shows a stitching guide sewing machine attachment designed to facilitate the feeding of a work piece to be stitched along a curved line. It is particularly useful as a means for stitching circular pieces of leather known as "ankle patches" to the sides of athletic shoes.



McDonald's Stitcher

The mechanism accurately positions the piece on the work-table of the machine and is automatically guided so that the patch may be neatly and uniformly stitched without requiring close attention on the part of the person who may be operating the machine.

In operation, with the presser-bar and needle-bar both raised the work is placed on the table in such position that the needle may be passed through one point of the work at the stitching line. The work piece is then rotated about the point pierced by the needle until another point in the stitching line is brought immediately under the point of the gage. The presser-bar is then lowered to bring the periphery of the wheel in contact with the work piece and press it firmly against the feed-bar. At the same time the holder or centering device will engage or pierce the work piece at the center of the patch.

The point of the gage is at sufficient elevation to permit the work piece to move freely under it. Thus adjusted the sewing may be effected with little or no attention on the part of the operator.—Francis A. McDonald, College Point, New York. United States patent No. 1,396,447.

Rubber-Covered Rolls

The rubber covering for machinery rolls may be made up in the form of a ring or sleeve with three or more densities of rubber. On the inside periphery is a thin layer of soft rubber, next to this is a layer of hard rubber and on the outside is the regular covering.

The roll center is turned slightly larger in diameter than the inside diameter of the ring or sleeve, grooved according to the size of the roll and shellacked. The ring or sleeve is placed in hot water, where it expands and is easily slipped over the roll by hand while the shellac is wet. As the hard rubber cools and shrinks, it compresses the inner layer of soft rubber and the ring or sleeve cannot be removed except by cutting it off the roll.

These rings or sleeves work equally well on metal, wood, fiber, etc., and are suitable for the textile trade, wringer rolls, casters and a number of other purposes for which small rolls are used.

Owing to the simplicity of attaching these rings or sleeves, the work can be done in the consumers' plants and thus eliminate the shipment of the centers and consequent delay.—Edwin Reed, Andover, Massachusetts. United States Patent No. 1,384,806.

Machine for Lasting Rubber Footwear

A somewhat intricate mechanism has been patented, adapted for lasting rubber-soled shoes uniformly and with more intimate and continuous union than is obtained by hand. The result is accomplished by the action of a series of wiping disks rotating against the upper and turning it over into smooth contact with the adhesive inner sole.—Louis A. Casgrain, Beverly, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey. United States patent No. 1,387,763.

OTHER MACHINERY PATENTS

The United States

1,399,118 Stationary tire-building machine. W. H. Hermann, Lancaster, assignor to the Herman Tire Building Machine Co., Columbus—both in Ohio.

1,399,128 Apparatus for making cushion tires. H. M. Lambert, Portland, Ore.

1,399,898 Apparatus and method for handling rubber goods. T. Sloper, Devizes, Eng.

1,399,936 Collapsible tire core. H. A. Denmire, assignor to The General Tire & Rubber Co.—both of Akron, O.

1,399,979 Tire-building machine. F. C. Merton, New Haven, Conn.

1,400,137 Apparatus and method for treating rubber. W. H. Bines, assignor to the Fire-stone Tire & Rubber Co.—both of Akron, O.

1,400,146 Mold and method for making hollow rubber articles. W. A. Eggers, Brooklyn, and T. Davis, New York—both in New York; said Eggers assignor to said Davis.

1,400,219 Expansible core for tires. A. Huetter, Dayton, O. (See THE INDIA RUBBER WORLD, March 1, 1921, page 433.)

1,400,258 Core for tire casings. J. B. Binns, Akron, assignor of 1/5 each to S. J. Taylor, E. Wissinger, and Superior Rubber Mold & Equipment Co., all of Cuyahoga Falls, and 1/5 to F. Nolte, Akron—both in Ohio.

1,400,289 Apparatus and method for dusting tire carcasses with powdered soapstone. D. E. Humphrey, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

1,400,913 Apparatus for the manufacture of hard rubber battery jars, etc. H. Schelhammer, Whitestone Landing, assignor to American Hard Rubber Co., New York—both in New York.

1,400,934 Pressure piston and discharge door for rubber-working machine. D. R. Bowen and C. F. Schnuck, assignors to Farrel Foundry & Machine Co.—both of Ansonia, Conn.

1,401,255 Mold for making fan-belts. C. D. Hibbs, Fort Worth, Tex.

1,401,567 Apparatus and process for manufacturing hollow rubber articles, including sectional metal core adapted to melt under vulcanization. H. R. Stratford and E. Scheuer, Cleveland, O.

1,401,795 Apparatus and method for separating rubber and fiber. C. W. Kohler and H. A. Hoffman, Akron, and W. B. Freeman, Cuyahoga Falls—both in Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

1,401,851 Heater unit for tire-repair vulcanizer. H. R. Ziebell, Ripon, Wis.

1,401,933 Dental vulcanizer. H. L. Wygert, Albany, N. Y.

The Dominion of Canada

214,269 Apparatus for the manufacture of rubber goods. T. Sloper, Devizes, Wiltshire, Eng.

214,343 Apparatus for making pneumatic-tire casings. T. Sloper, Devizes, Wiltshire, Eng.
214,394 Tire mold. S. M. Jackson, Tacoma, Wash., U. S. A.
214,572 Tire-core stripping machine. The B. F. Goodrich Co., New York, N. Y., assignee of C. Kuentzel, Akron, O.—both in U. S. A.
214,574 Tire-building machine. The Goodyear Tire & Rubber Co., assignee of W. B. Harsel—both of Akron, Ohio, U. S. A.
214,788 Mold and method for vulcanizing tires. The Fisk Rubber Co., Chicopee Falls, assignee of T. Midgley, Hampden, and R. B. Naylor, Springfield—all in Mass., U. S. A.

New Zealand

44,000 Heel mold. J. G. Tufford, 1217 East avenue, Elyria, Ohio, U. S. A.

The United Kingdom

170,349 Tire mold. Wood-Milne, Limited, 2 Central Buildings, Westminster, and E. R. Pearce and R. Tooley, Ajax Rubber Works, Leyland, Lancashire.
170,876 Tire-retreading vulcanizer. M. Reid, 153 Alexander street, Vancouver, British Columbia, Canada.
170,931 Collapsible tire core. H. A. Denmire, 520 Spicer street, and The General Tire & Rubber Co., Englewood street—both in Akron, Ohio, U. S. A.
170,966 Hand-controlled stitcher roll for making tires. The Goodyear Tire & Rubber Co. and F. A. Seiberling, 1144 Market street, Akron, Ohio, U. S. A.
171,182 Apparatus for molding pneumatic tires. T. Sloper, Southgate, Devizes, Wiltshire.

Germany

Design Patents Issued, with Dates of Issue

798,370 (January 14, 1921) Hand-vulcanizing apparatus. L. J. Rabau, Linden Allee 24, Charlottenburg.
799,640 (November 2, 1921) Adjustable arrangement of clamps on comb-cutting machines, with mark holder swinging against the saw. Fa. Fritz Claussner, Nürnberg.
799,641 (November 2, 1921) Mechanism for holding flying saws on saw shafts of comb-cutting machines. Fa. Fritz Claussner, Nürnberg.
799,852 (October 25, 1921) Portable vulcanizing apparatus. Hugo Schübel, Karpfenteichstrasse 2, Berlin-Treptow.
800,294 (October 24, 1921) Pot-shaped vulcanizing kettle without jacket and stand. Eugen Hans, Zeil 85, Frankfurt a. M.
801,426 (November 22, 1921) Belting connection. Carl Wehrend, Klinkenstrasse 5, Kiel.

PROCESS PATENTS

The United States

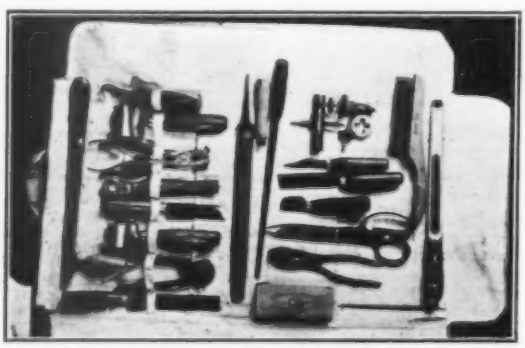
1,400,538 Manufacturing belts of rubberized material. C. C. Gates, Denver, Colo.
1,400,618 Vulcanizing rubber articles. W. M. Mackintosh, Springfield, assignor to Kelly-Springfield Tire Co., Akron—both in Ohio.
1,401,480 Manufacturing endless V-shaped or angular belts. C. E. King, assignor to Capen Belting & Rubber Co.—both of St. Louis, Mo.

The Dominion of Canada

214,787 Manufacture of fabric and rubber shoe soles, the fabric being at right angles to the surface plane. Firestone Tire & Rubber Co., assignee of H. F. Maranville—both of Akron, Ohio, U. S. A.

PRACTICAL TOOL KIT FOR REPAIRMAN OR VULCANIZER

In the recent preparation of a repairman's tool kit by a Western manufacturer, no utensil appears to have been omitted which

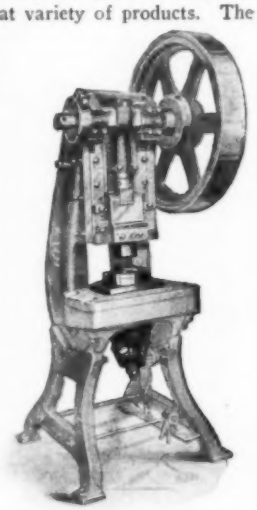


Repairman's Kit

is necessary for tire repairing or vulcanizing. The equipment comprises twenty-seven tools including ball-bearing rollers and stitchers, special cutlery steel rubber knives, pliers and rubber shears made of the best English steel, etc. It is claimed that if these tools were bought separately the cost would be greater, while the quality would be no better than that offered in the present outfit. The illustration shows the practicality and completeness of the equipment.—K. B. Tool Co., Alliance, Nebraska.

RUBBER SPRING ATTACHMENT FOR DIE PRESS

A die press such as that shown in the illustration is used for punching from sheet metal such articles as boxes, covers, can tops, bottoms, etc., for packing a great variety of products. The die used is arranged in combination with a rubber cylindrical spring the compression of which reacts to automatically push out the finished article. The newest arrangement of the rubber spring is in combination with a toggle, the application of which motion in addition to uniform pressure reduces the rubber spring compression materially. A further power saving is also said to be made by eliminating the accumulative spring pressure and the reduction of compression increases the life of the rubber spring.—E. W. Bliss Co., Brooklyn, N. Y.



Toggle Joint Die Press

COLLAPSIBLE RIM

The collapsible tire rim shown in the illustration is ingeniously designed as a practical relief to the motorist from the inconvenience of changing tires. It is available in all standard sizes.

"Perfect" Collapsible Rim

To change a tire on the collapsible rim just give it a sound bounce—unlocking it. To lock it, snap the patented collapsing section back in place with the foot. Once locked on the wheel it is secure against creeping or squeezing.—Collapsible Rim Corporation, 1819 Broadway, New York.

SUGGESTIONS TO TRUCK USERS

A truck rated at two to three tons, hauling a load of gravel weighing 5,400 pounds for a distance of ten miles, met with no trouble from the front tires, but the rear ones did not hold up, according to the owner. The difficulty was that the 38 by 7 pneumatics on the rear wheels were being overloaded approximately 1,000 pounds each. The maximum carrying capacity of 6-inch pneumatic truck tires is 2,200 pounds, 7-inch pneumatics 3,000 pounds, 8-inch pneumatics 4,000 pounds and 7-inch solids 4,500 pounds. It is recommended that with this truck either 8-inch pneumatics on 8-inch rims should be used for the rear wheels or, better still, that a 7-inch solid tire be substituted. With pneumatics on the front wheels and Monotwin solid tires on the rear wheels, most satisfactory results should be obtained.—Technical Service Bureau, United States Tire Co., New York, N. Y.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS.—H. C. Pearson's "Rubber Machinery."

News of the American Rubber Trade

Financial

Goodrich Financial Position Favorable

SALES of The B. F. Goodrich Co. for the fiscal year ended December 31, 1921, approximated $87,000,000. A loss of approximately $9,000,000 was sustained, the major portion of which was due to a further heavy decline in market values of raw materials that required additional adjustments in the inventory valuations since the close of business on December 31, 1920. The company began the year 1922 without any bank indebtedness as against bank loans of $29,000,000 a year ago, with combined inventories of rubber and fabric on hand and under commitment at market values on December 31, 1921, and with its finances in a strong position. Current assets were approximately $51,500,000 and current liabilities were approximately $3,300,000. Selling prices are unduly low but with a reasonable volume of business together with the economies effected in operating costs it is expected that the company will earn a fair margin of profit in 1922. The directors have declared the regular dividend of $1.75 per share on preferred stock payable on April 1, 1922, to stockholders of record at the close of business March 22, 1922.

Grand Rapids Tire & Rubber Company Increases Capitalization

Capitalization of the Grand Rapids Tire & Rubber Co., Grand Rapids, Michigan, has been recently increased from $1,000,000 to $3,000,000. This proceeding was considered advisable, as an enlargement of the plant has become necessary, in order to fill orders and contracts now on hand, which amount to $2,560,000.

The company has very recently paid its first quarterly dividend of 2 per cent on its preferred stock, and it is the expectation of the company to pay these dividends regularly from now on.

McGraw Company Holds Annual Stockholders' Meeting

The annual meeting of the stockholders of the McGraw Tire & Rubber Co., 4810 Prospect avenue, Cleveland, Ohio, was held in East Palestine, Ohio, on January 9, 1922. At this meeting the following directors were elected: John Morgan, William H. Marlatt, C. H. Wheeler, L. M. Kyes, M. H. Murch, W. S. Quinlan, G. E. Randles, R. V. Mitchell, Mac S. Bethel, F. W. Treadway and Ben H. Davis.

The annual report as presented by William H. Marlatt, secretary and treasurer, reviewed the company's progress during 1921, and informed the stockholders present that the renewal of important contracts had been secured, and that every indication pointed to a profitable year for 1922.

Owing to the illness of John Morgan, president of the company, the meeting of the board of directors was postponed, and it will in all probability be held at an early date in Cleveland, at the company's offices.

General Tire & Rubber Co. Balance Sheet

The General Tire & Rubber Co., Akron, Ohio, made a remarkable showing according to the balance sheet and statement for the fiscal year 1921. Sales for the year were $250,000 in excess of the 1920 figure of $5,750,000. Loans, which in 1920 amounted to approximately $1,600,000, were completely wiped out. Inventory was reduced from $1,300,000 to almost one-third, after being turned over twelve and one-half times, while quick current assets amounted to $1,800,000 as compared with current liabilities of little more than $100,000. Total volume of output in units was fifty per cent larger in the year 1921 than in 1920.

The balance sheet, as of November 30, 1921, shows cash, $182,015, as compared with $172,251 in 1920; accounts receivable, $868,569, as compared with $958,870 in 1920; notes receivable, $329,686, as compared with $138,442 in 1920; inventory, $465,191, as compared with $1,300,470 in 1920. Total quick assets are $1,846,969, as compared with $2,616,369 in 1920. Total assets are $2,460,189, as compared with $3,303,467 in 1920.

Liabilities are given as accounts payable, $64,000; excise taxes accrued, $4,436; reserve for local taxes, $35,219; surplus, $221,185, and outstanding capital stock, common and preferred combined, $2,135,250.

Financial Notes

The balance sheet of The Goodyear Tire & Rubber Co., Akron, Ohio, as of November 30, 1921, showed $2,000,000 more cash than of September 30. At the present time this item, which includes treasury certificates and other government securities, is given at $25,000,000. Current assets are reported at $63,000,000, as against $5,500,000 current liabilities. The company has no bank debts under the reorganization.

Stock sales of the Seiberling Rubber Co., Akron, Ohio, have not made the headway expected. The Portage Rubber Co. stockholders were given the privilege of purchasing $800,000 worth of the stock on partial payments and a three per cent discount, but only about one-half of this amount was subscribed in the time allotted to its sale on this special basis. No information regarding general sales has been given out, but it is becoming general belief that the stock will have to be underwritten by a brokerage house in order to insure immediate flotation of the initial $2,000,000 offered by the company.

Thus far little progress has been made in solving the financial difficulties of the Phoenix Rubber Co., Akron, Ohio, which was placed in a receivership early in December. The company is reported as having $350,000 liabilities against $700,000 assets, but is short of working capital. All efforts to raise finances through a bond issue early in the fall failed. At the present time the receiver, Joseph Winum, and the creditors' committee are discussing plans for a new bond issue for ultimate liquidation by sale of the plant, probably as a going concern.

The following financial plan which has been formulated by the receiver of the Kelley Tire & Rubber Co. and the Martin Tire & Rubber Co., has the sanction of the stockholders' protective committee: Edward D. Newman, of New York City, is to form a new corporation which is to buy from the receivers the plant and equipment of the Kelley Tire & Rubber Co. and the Martin Tire & Rubber Co. for a sum sufficient to pay the debts of these companies and the expenses of the receivership proceedings in both cases, not to exceed in all the sum of $250,000. In order to raise this sum, a closed mortgage, not exceeding $275,000, will be placed upon the plant and equipment by the new corporation, and bonds to the amount of $275,000, secured by this mortgage, will be offered to the stockholders of both companies.

New York Stock Exchange Quotations

JANUARY 23, 1922

	High	Low	Last
Ajax Rubber Co., Inc.	14⅛	13¾	14
Fisk Rubber Co., The	12⅝	12¼	12½
Goodrich, B. F., Co., The	38	37⅛	37¾
Goodrich, B. F., Co., The, pfd.	86½	86½	86½
Kelly-Springfield Tire Co.	38¼	37¼	37½
Keystone T. & R. Co., Inc., The	17⅛	16¾	17
Lee R. & T. Corporation	28⅛	28	28¼
United States Rubber Co.	56⅛	54¼	54⅜
United States Rubber Co., 1st pfd.	100⅞	100⅞	100⅞

Akron Rubber Stock Quotations

The following are closing quotations of January 18, supplied by the App-Hillman Co., Second National Building, Akron, Ohio:

	Bid	Asked
American R. & T. Co., com	28	32
Amazon Rubber Co., The	8	15
Firestone T. & R. Co., com	50	55
Firestone T. & R. Co., 6% pfd	80	82
Firestone T. & R. Co., 7% pfd	72	74
General T. & R. Co., The, com	200	210
General T. & R. Co., The, 7% pfd	85	90
Goodrich, B. F., Co., The, com	37	38
Goodrich, B. F., Co., The, pfd	85	88
Goodrich, B. F., Co., The, 5-yr. 7% notes	98	98.4
Goodyear, T. & R., Co., The, com	11½	12½
Goodyear, T. & R., Co., The, 7% pfd	27	27½
Goodyear, T. & R., Co., The, 8% prior pfd	66	68
India T. & R. Co., com	60	66
India T. & R. Co., The, 7% pfd	60	70
Mason T. & R. Co., The, 7% pfd	40	43
Mason T. & R. Co., The, com	4.6	5½
Marathon T. & R. Co., com	2½	3½
Miller Rubber Co., The, com	69	73
Miller Rubber Co., The, 8% pfd	85	90
Mohawk Rubber Co., The	90	100
Republic Rubber Corporation, com	..	25c
Republic Rubber Corporation, 7% pfd	10	15
Republic Rubber Corporation, 8% pfd	..	2½
Rubber Products Co., The	30	45
Standard Tire Co., The, com	..	80
Standard Tire Co., The, pfd	..	80
Star Rubber Co., The, com	..	75
Star Rubber Co., The, 8% pfd	..	90
Swinehart T. & R. Co., The, com	..	40
Swinehart T. & R. Co., The, 7% pfd	..	70

Dividends Declared

COMPANY	STOCK RATE	PAYABLE	STOCK OF RECORD
Allis-Chalmers Manufacturing Co.	Com. $1.00 q.	Feb. 15	Jan. 24
Armstrong Rubber Co., Inc.	Com. $0.75	.....	Dec. 31
Canadian Consolidated Rubber Co., Limited	Com. 1¾% q.	Feb. 15	Jan. 31
Canadian Consolidated Rubber Co., Limited	Pfd. 1¾% q.	Dec. 31	Dec. 23
Eagle-Picher Lead Co.	Pfd. 1½% q.	Jan. 5	Jan. 17
General Tire & Rubber Co., The	Pfd. 1¾% q.	Jan. 1	Dec. 20
Goodrich, B. F., Co., The	Pfd. $1.75 q.	Apr. 1	Mar. 22
Grand Rapids Tire & Rubber Corporation	Pfd. 2% q.	Jan. 7	.....
Hood Rubber Co.	Pfd. $1.75 q.	Feb. 1	Jan. 21
Kelly-Springfield Tire Co.	Pfd. $2.00 q.	Feb. 15	Feb. 1
Lee Rubber & Tire Corporation	Com. $0.50 q.	Mar. 1	Feb. 15
Mason Tire & Rubber Co., The	Pfd. 1¾% q.	Jan. 20	Dec. 31
New Jersey Zinc Co., The	Com. 2% q.	Feb. 10	Jan. 31
Philadelphia Insulated Wire Co.	Com. $1.00 s. a.	Feb. 1	Jan. 28
Standard Underground Cable Co.	Com. 3% q.	Jan. 10	Jan. 4
Standard Underground Cable Co.	Com. 3% ex.	Jan. 10	Jan. 4
Standard Underground Cable Co.	20% stock	Jan. 25	Jan. 14
United States Rubber Co.	1st Pfd. 2% q.	Jan. 31	Jan. 16

New Incorporations

1921

Acme Tire Sales Corporation, December 15 (Oklahoma), $20,000. R. V. Hite; J. A. Yeager; L. A. Chipley—all of Oklahoma City, Oklahoma. Principal office, Oklahoma City, Oklahoma. To deal in tires, accessories and equipment.

Acushnet Process Co., December 15 (Massachusetts), $400,000. A. H. Morse, president; J. S. Dole, treasurer; C. E. Whitney clerk—all of 60 State street, Boston, Massachusetts. Principal office, New Bedford, Massachusetts. To manufacture and deal in rubber and rubber goods.

Aero Cushion Inner Tire Co., November 21 (Florida), $50,000. J. A. Cox, president; E. W. Evans, vice-president; W. I. Evans, secretary—all of St. Petersburg, Florida. Principal office, St. Petersburg, Florida. To manufacture and sell rubber products.

Ajax Tire Co., December 14 (Texas), $5,000. D. C. Booth, president and treasurer; W. J. Jackson, secretary. Principal office, El Paso, Texas. To manufacture tires.

Ajax Tire Co. of Fresno, December 17 (Delaware), $8,000. T. W. Dwyer, president, general manager and treasurer, 530 Golden Gate avenue, San Francisco, California; W. J. Jackson, secretary. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. Principal office, 220 West 57th street, New York, N. Y. To sell the products of the Ajax Rubber Co., Inc., in and about Fresno, California.

Blue Ribbon Tire Service, Inc., November 16 (Connecticut), $13,000. J. P. O'Day, president; F. B. Alling, secretary and treasurer. Principal office, 134 Cannon street, Bridgeport, Connecticut. To sell tires.

Century Garter Co., Inc., December 21 (New York), $3,000. B. Seitzman, 495 Sutter avenue; M. Waxman, 660 Howard avenue, both of New York; J. G. Kremer, 89 Beechwood avenue, Mount Vernon—both in New York. To manufacture garters.

Columbia Garter Co., Inc., The, December 22 (New York), $3,200. S. and I. Folkman, both of 93 Rockaway Road, Jamaica; M. Kleiner, 544 Hinsdale street, Brooklyn—both in New York. Principal office, Jamaica, New York. To manufacture elastic garters.

Crown Rubber Products Co., December 27 (Ohio), $10,000. H. F. Rolf; J. F. Carpenter; H. B. Hoener; R. A. Graham; E. V. Dake—all of Cleveland, Ohio. Principal office, Cleveland, Ohio. To manufacture and deal in rubber products.

Daniel Tire Corporation Co., December 20 (Ohio), $10,000. J. L. Daniel; C. W. Mills; F. C. Secrest; J. J. Hehman; D. H. Roche—all of Chillicothe, Ohio. Principal office, Chillicothe, Ohio. To manufacture all kinds of rubber products.

Doscat Tire & Rubber Corporation, December 27 (New York), $200,000. H. W. Edwards, Jr., 389 Monroe avenue; W. H. Karnes, 206 Oriole street; H. Wolf, 62 Weaver street—all of Rochester, New York. Principal office, Rochester, New York. To manufacture tires and retreads.

Doyle Co., Devane S., October 31 (Florida), $25,000. D. S. Doyle, president, Tampa; H. Shepard, vice-president, Jacksonville; C. F. Shepard, secretary, Tampa—both in Florida. Principal offices, Tampa, Florida. To deal in tires and automobile accessories.

Economy Patches Co., Inc., December 29 (New York), $25,000. O. Brown, 1170 Clay avenue; D. J. Murphy, 303 West 114th street; J. M. Murphy, 321 West 48th street—all in New York City. To manufacture rubber goods and automobile supplies.

Fayette Tire Co., December 19 (Kentucky), $10,000. W. R. McConnell; J. M. Kash; E. Adams—all of Lexington, Kentucky. Principal office, Lexington, Kentucky. To deal in tires.

Florida—Cuba Tire Corporation, December 23 (Florida), $100,000. W. T. Carter, president; H. A. Phillips, vice-president; K. P. Carter, secretary—all of Miami, Florida. Principal offices, Miami, Florida. To buy, sell and deal in automobile tires.

Hill Rubber Co., December 21 (Delaware), $25,000. F. R. Hansell; J. V. Pimm—both of Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in tires, etc.

I X L Tire Co., December 27 (Delaware), $300,000. H. K. and C. I. Hoch; M. E. Hothersall—all of Wilmington, Delaware. Delaware agent, Delaware Incorporating Co., 318 Ford Building, Wilmington, Delaware. To manufacture, buy, sell and deal in tires of all kinds.

Iner-Guard Tube & Rubber Co., November 23 (Missouri), $300,000. L. Goodhart, president; L. Burnham, vice-president; J. H. Heitman, secretary; J. Hatz, treasurer. To manufacture tubes.

Johnson-Martin Co., Inc., November 23 (Massachusetts), $100,000. W. H. Johnson, president and assistant treasurer, Arlington, New Jersey; H. J. Martin, vice-president and treasurer, Brookline; W. L. Allen, clerk, 209 Washington street, Boston—both in Massachusetts. Principal office, Brookline, Massachusetts. To manufacture and deal in garters, suspenders, garter webbing, etc.

K. & F. Heel Co., December 13 (Ohio), $150,000. J. C. Krieg; F. Fishbough; P. E. Taylor; G. W. Stewart; F. Stone. Principal office, Newark, Ohio. To manufacture rubber and composition heels.

Kentucky Non-Deflating Tube Co., December 3 (Kentucky), $25,000. D. H. Hopkins; H. J. Carey; R. J. Griffith—all of Dawes, West Virginia. Principal office, Ashland, Kentucky. To sell and repair tubes, tires, etc.

Lapworth Webbing Co., C. A., December 19 (Massachusetts), $300,000. C. A., W. W. M. and C. N. Lapworth, president, treasurer, and clerk, respectively—all of Howard street, West Bridgewater, Massachusetts. To manufacture and deal in webbing, etc.

Liberty Tire Co., The, December 7 (West Virginia), $25,000. G. B. Hervey, president; K. A. Haddad, vice-president; H. M. Allen, secretary; G. V. Powell, assistant secretary; L. R. Crago, treasurer. Principal office, 901 Market street, Wheeling, West Virginia. To deal in tires, tubes and automobile accessories.

Massachusetts Webbing Co., December 27 (Massachusetts), $250,000. Incorporators and directors, J. W. Wood, president, K. A. Crimmins, treasurer and clerk; H. W. Denison—all of Stoughton, Massachusetts. Principal office, Stoughton, Massachusetts. To manufacture and deal in elastic and non-elestic webs, etc.

Metropolitan Air Goods Co., November 24 (Massachusetts), $200,000. L. S. Starrett, president; R. A. Whall, general manager and treasurer. Principal office, Athol, Massachusetts. To manufacture pneumatic rubber goods.

Nash-Kelly Auto & Tire Co., December 12 (Oklahoma), $25,000. A. C. Seeley; S. C. Burnette; F. W. Files—all of Pawhuska, Oklahoma. Principal office, Pawhuska, Oklahoma. To buy and sell automobile tires, etc.

National Manufacturing & Sales Co., Inc., December 31 (North Carolina), $25,000. O. C. Klingman, president; R. M. Middleton, vice-president; E. C. Klingman, secretary and treasurer. Principal office, 315 West Market street, Greensboro, North Carolina. To manufacture and sell patching material for tires and tubes, etc.

Northwestern Rubber Co., December 6 (Washington), $100,000. O. E. Elliott; W. L. Louning; J. Thomas. Principal office, Seattle, Washington. To manufacture and deal in all classes of rubber goods.

Oakland Sales Co., December 21 (Florida), $15,000. E. W. Buchanan, president, Orlando; P. J. Hackney, vice-president; E. S. Hull, secretary, both of Palmetto—both in Florida. Principal office, Tampa, Florida. To deal in tires, etc.

Respro, Inc., November 30 (Rhode Island), $100,000. E. A. Kingman; W. A. Edwards; K. J. Tanner—all of Providence, Rhode Island. Principal office, Cranston, Rhode Island. To manufacture and deal in rubber and fiber products.

Shepard Import Co., Inc., (New York), $60,000. N. C. Shepard, president; X. W. Obalski, vice-president and treasurer; T. R. Shepard, secretary. Principal office, 291 Broadway, New York City. To import and deal in crude rubber.

Trinity Rubber Products Corporation, November 18 (New Jersey), $25,000. C. H. Dunham, Highland Park; J. E. Westburgh, New Brunswick; E. L. Daniels, South River—all in New Jersey. Principal office, 33 Drift street, New Brunswick, New Jersey. Agent in charge, J. E. Westburgh. To manufacture, buy, sell and deal in articles composed wholly, or in part of rubber, etc.

Tri-State Tire Co., December 29 (Tennessee), $50,000. E. R. and S. B. Blair; L. E. Exum; L. P. Berry, Jr.; H. Spears. Principal office, 633 Monroe avenue, Memphis, Tennessee. To deal in tires and accessories.

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Batavia Tire Sales & Service Co., January 9 (Delaware), $500,000. R. T. Moniz, 690 Highland avenue, Peekskill; E. M. Fraser, Meadowbrook—both in New York; T. D. Dunville, 44 Beach Road, Ridgewood, New Jersey. Delaware agent, Delaware Registration Trust Co., 100 West 10th street, Wilmington, Delaware. To deal in tires and tubes.

Goodyear Tire & Rubber Export Co., January 17 (Delaware), $10,000. T. L. Croteau; M. A. Bruce; C. H. Blaske—all of Wilmington, Delaware. Delaware agent, Corporation Trust Co. of Ameriva, Du Pont Building, Wilmington, Delaware. To export rubber goods.

Harvey Manufacturing Co., January 9 (New Jersey), $100,000. J. A. Harvey; S. M. Tracy; E. A. Grewe, Jr.—all of 277 Sherman avenue, Newark, New Jersey. Principal office, 277 Sherman avenue, Newark, New Jersey. Agent in charge, J. A. Harvey. To manufacture, buy, sell and deal in insulated wire.

Holley Buick Co., January 10 (South Carolina), $10,000. J. M. Holley, president; J. R. Woodward, treasurer—both of Aiken, South Carolina. Principal office, Aiken, South Carolina. To deal in tires, etc.

Liles, Inc., James F., January 12 (South Carolina), $10,000. J. F. Liles, president and treasurer; G. G. Liles, secretary. Principal office, 115 Marlboro street, Bennettsville, South Carolina. To deal in tires, etc.

Maguire Tire & Rubber Co., January 5 (Delaware), $5,000,000. J. W. Maguire, president; C. Christy, vice-president; A. N. Eastman, treasurer and director; J. A. Elden, acting secretary and attorney, 816 Hippodrome Building, Cleveland, Ohio. Delaware agent, Corporation Trust Co. of America, Du Pont Building, Wilmington, Delaware. To manufacture and sell automobile tires, tubes and similar products.

Phoenix Rubber Co., Inc., January 6 (Massachusetts), $25,000. C. D. Burnes, treasurer, 100 Columbia street, Brookline; C. D. and L. H. Wener, president and clerk respectively, both of 50 Hunt street, Brockton—both in Massachusetts. Principal office, Brockton, Massachusetts. To manufacture rubber cement, rubber heels and all other rubber products.

Plymouth Rubber Co., Inc., January 10 (Massachusetts), $150,000. M. J. Hamilburg, president; R. B. Gryzmish, first vice-president and treasurer; M. E. Bernkopf, second vice-president, assistant treasurer and clerk—all of 611 Tremont Building, Boston, Massachusetts. Principal office, Canton, Massachusetts. To manufacture and deal in rubber, etc.

Portercord Tube Co., January 6 (Delaware), $25,000. G. L. Green, 300 Madison avenue, New York City; J. H. Coghill; V. T. Sutphen—both in Morristown, New Jersey. Delaware agent, United States Corporation Co., 19 Dover Green, Dover, Delaware. To deal in tires, tubes, etc.

R. & M. Auto Co., January 13 (Delaware), $200,000. F. R. Hansell; J. V. Pimm—both in Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey. Delaware agent, Corporation Guarantee & Trust Co., 927 Market street, Wilmington, Delaware. To manufacture and deal in tires, tubes and rubber goods.

Rubber-Metal Horse Footwear, Inc., January 4 (New York), $1,000,000. F. S. Holmwood; E. C. Wick; W. J. Sutton—all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture rubber-metal horseshoes.

"Sure-On" Tire Saver Co., January 2 (Delaware), $1,750,000. J. L. Buehl, 2238 Lewis street; J. G. and S. M. Wolfe, both of 2611 North Albany avenue—both in Chicago, Illinois. Delaware agent, Delaware Registration Trust Co., 100 West 10th street, Wilmington, Delaware. To deal in "Sure-On" tires.

United Pepsin Gum Co., January 6 (New Jersey), $500,000. A. H. Koellhoffer; N. Montgomery, both of Newark; F. P. Brown, Belleville—both in New Jersey. Principal office, 263 Washington avenue, Newark, New Jersey. Agent in charge, A. H. Koellhoffer. To manufacture chewing gum.

The Rubber Trade in the East and South

Manufactured Goods

Reports from eastern rubber manufacturers indicate that orders are slowly increasing in volume and the demand wider spread and less spotty. Automobile tire production is approaching capacity output for single shift of operators and in some instances is actually at that level. In mechanical lines increase of business is not apparent except in such seasonal lines as jar rings and molded hose. Salesmen have just departed on the campaign for spring business hopeful of developing some good contracts. Prices in all lines are keenly competitive and at something like, if not below, pre-war levels. There is little doing in weatherproof clothing and the same is true in auto-topping for which it is yet rather early. The production of insulated wire and cables is only moderately active. The reported increase in building permits granted indicates considerable business to come from which the insulated wire trade will benefit in due time. So far the winter of 1921-22 has not heavily depleted dealers' stocks of foot wear.

The effect of a poor season for boots and shoes is not felt until the manufacturing campaign begins in the spring for the following winter. At this time rubber footwear manufacturing tickets are naturally reduced as the competition of old orders approaches. Rubber heels being less seasonable than rubber foot wear generally, are just now at capacity production and are likely to continue so.

Eastern and Southern Notes

New York

Announcement is made by the Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y., that at a recent directors' meeting John V. Mowe was elected vice-president of the company. Mr. Mowe was formerly general sales manager.

J. R. Weddell, formerly with the Firestone Tire & Rubber Co., Akron, Ohio, as advertising manager, has joined the Erickson Co., Inc. advertising agents, New York, N. Y.

Pfaltz & Bauer, Inc., importer and exporter, and manufacturers' agent, is continuing to act as the sole selling agency for E. de Haen of Germany. Imports consist of various rubber chemicals prepared by the last-mentioned firm, while a specialty is made of antimony sulphurets. A new accelerator, to be known as "Xantopone," is being brought out by the de Haen organization.

A removal of its offices to Room 811, 35 Nassau street, is announced by S. M. Mullin & Co., a firm of crude rubber brokers, New York, N. Y.

It is announced by officials of the Firestone Tire & Rubber Company that L. L. McClintock, formerly manager of the company's Pittsburgh branch, has been appointed manager of the New York City offices, at 1871 Broadway.

J. Robert Smith has recently accepted a vice-presidency with the Smith Chemical & Color Co., 257-259 Water street, New York, N. Y., a firm headed by his brother, Casper Smith, who has become well-known in the chemical and color industries. J. Robert Smith was for a time one of the faculty at the University of Wisconsin, served later as an expert in the United States Department of Agriculture, and during the war had charge of an important section in the Quartermaster-General's offices, at Washington, D. C. In his present connection Mr. Smith will specialize in heavy chemicals, mineral fillers and dry colors.

Among recent elections to membership in the Merchants' Association of New York the name of the following organization was noted: Barnard-Lynah, Incorporated, O. A. Barnard, president, 321 Broadway, cotton goods commission.

The Walker Webbing Co., with mills at Providence, Rhode Island, and Brockton, Massachusetts, and warehouses and offices in Providence, Chicago, Boston, and San Francisco, has removed its New York offices and showrooms to 295 Fifth avenue, at 30th street. The showrooms are excellently adapted for the display of this company's many products, which include several kinds of braiding and belting, notions, etc., as well as elastic webbing, braids, and cords.

The Middletown Rubber Co., Inc., is now equipping its factory at Middletown, N. Y. to make "Middletown" cord tires, inner tubes and rubber specialties. The company was incorporated for $1,000,000 in 1919, but up to the present time has had tires made by another organization. Executives of the company, whose main offices are at 280 Broadway and 5 Columbus Circle, New York, N. Y., are: Myron J. Friedman, president; Frederick A. Schultz, vice-president; John T. MacDonald, secretary and treasurer, and M. Friedman, purchasing agent.

John F. Donovan, 1674 Broadway, New York, N. Y., has been appointed special representative for C. J. Osborn Co., 132 Nassau street, New York, N. Y., dealer in colors and compounding ingredients for the rubber trade.

The J. J. Beyerle Manufacturing Co. has changed its name to Beyerle Manufacturing Co. and removed from 18 West 20th street to 160 Fifth avenue, New York, N. Y. J. D. Farkas is the senior member. The concern manufactures a line of sanitary specialties under the trade mark "Puritan Products," as well as the "Jiffy-Lock" bathing-suit bags.

Connecticut

According to officials of the Seamless Rubber Co., Inc., New Haven, Connecticut, an addition which will considerably increase their plant efficiency will soon be constructed. The new building, to cost, it is said, $100,000, will be a one-story structure, 140 by 200 feet, and isolated from the main factory because of fire risk. Recent improvements in humidifying and air conditioning will be utilized, and the new section, devoted to dipped goods only, will be modern in every respect. Operations will begin here, according to present plans, on May 1, 1922. F. O. Williams is president of the company.

J. H. Sessions & Son, Bristol, Connecticut, are making cupped burrs for rubber heels in addition to the flat burrs they have supplied to the trade for a number of years. Both the cupped and flat burrs have the central holes desired by rubber heel manufac-

turers. This firm is said to be the pioneer in this line, having made this kind of burrs since 1907. Their factory capacity for this material is large and they supply some of the largest heel-makers in the country. A. H. Craig is secretary of the company.

Ernst J. Spitzer, receiver and general manager of the Rubber Products Corporation, Shelton, Connecticut, reports that conditions at this plant are improving. The company, which manufactures "Black Stripe" inner tubes and mechanical rubber goods, is said to be meeting its past obligations for material, which are nominal, and is also making plans for expansion along certain lines. Other officers of the Rubber Products Corporation are: George H. Dowsey, president; and Leslie E. Wears, secretary and treasurer.

Pennsylvania and Southern

H. W. Smith, formerly general manager of the Lehigh Rubber Co., New Castle, Pennsylvania, recently taken over by the Seiberling interests, has been made president and treasurer of the subsidiary company. J. F. Seiberling has been named secretary and Norman A. Martin, of New Castle, has been named vice-president.

The Campbell-Niedringhaus Co., which operates a chain of stores, has recently found it necessary to open another tire store at 108 Market street, Harrisburg, Pennsylvania, which will act as wholesale and retail distributers of Lee tires. H. B. Johnston, formerly manager of the Campbell-Niedringhaus Co., and later connected with the Lee organization for several years, will be in charge of this Harrisburg branch.

The Vulcweld Rubber Co., Pottstown, Pennsylvania, manufacturer of super-size tires and tubes, recently purchased 392 by 300 feet of ground on West High street in Pottstown, and on this site plans to build a modern two-story tire factory, and power and storage houses, as well as several garages. Ground will be broken for the buildings about June 1, 1922. E. W. Smith is president of the company.

The William M. Moore Co., Inc., 1354-60 Girard avenue, Philadelphia, Pennsylvania, will be hereafter known as The General Tire Company of Philadelphia, Inc. Mr. Moore's personal withdrawal from the company is the only one affecting the old personnel of this rapidly-growing organization. J. R. Baltz remains president of the company, and J. C. Given holds the offices of vice-president and sales manager. It will be remembered that Mr. Given was for many years connected with the United States Tire Co. as branch and district manager throughout the East, and later was Philadelphia branch manager and special Eastern representative of the Miller Rubber Co.

The Rubber Association of Philadelphia held its first annual meeting, January 24, at the Manufacturers' Club, Philadelphia. The membership of this association is made up of manufacturers of and jobbers in rubber goods and includes many members of the executive and sales forces of such concerns.

The Atlanta, Georgia, branch of the Lee Tire & Rubber Co. has moved into larger and better quarters at 328 Peachtree street. This is the second time in its six years of existence that this branch has outgrown its accommodations. Ward Fitzpatrick is local manager, and George H. Wright district manager.

CONTINENTAL-MEXICAN RUBBER COMPANY RESUMES OPERATIONS

It is announced that the Continental-Mexican Rubber Co. resumed operations at its Torreon, Mexico, plant, about January 10. There has been no production here since December, 1920, due to activities of revolutionists. A campaign of from three to four months is planned, which should result in about 700,000 pounds of rubber. Supplies on hand are now much reduced. The Mexican concern is a subsidiary of the Continental Rubber Co. of New York, 120 Broadway, New York, N. Y. W. P. Smith is secretary of this main organization.

The Rubber Trade in New Jersey

Manufactured Goods

The rubber industry in Trenton as a whole seems strong in the belief that a substantial improvement is near at hand. The improvement is even now becoming noticeable. Many buyers are sending in shipping specifications while those who have not yet covered their requirements for the season are inquiring for prices. The evidences of revival are probably greater in the mechanical rubber goods lines than in the tire business although some tire factories have received some very nice orders within the last few weeks, indicating that interest has been aroused among the trade by the present low prices and the well exhausted stocks. All of the local factories making garden hose are busy and have had their share of business, in fact these departments are working over time in some factories. On the whole the outlook is more promising than it has been any time during the last few months and manufacturers are of the opinion that just as soon as the trade realizes that the bottom has been reached regarding prices the demand for goods will improve.

Many of today's prices are based on raw materials much lower-priced than now prevail. Garden hose prices, for instance, are usually formulated in the early summer. Prices of crude rubber, cotton yarns, sheeting and duck, as well as many other raw materials, were much lower-priced in June and July, 1920, when this season's prices were put out by the manufacturers, than the same materials are today. If the usual volume of business had come along, rubber goods prices would be much higher than they are, and the buyer who has not yet fully covered his requirements on seasonable goods for the season of 1922, will be acting wisely by getting into the market at once, for as manufacturers find interest and demand increasing they will be encouraged to advance prices. Such advances will be entirely legitimate because replacement values of raw materials are so much higher that goods cannot be produced and sold at the prices prevailing five or six months ago.

Trenton Notes

The Rubber Manufacturers' Association of New Jersey will hold its next regular meeting on February 13. Many matters of interest will be brought before the meeting and a full attendance is expected. President Stokes will announce the permanent committees and outline the work to be accomplished during the current year.

Effective January 1, 1922, the firms of Edward B. Fulper and the American Oil & Supply Co., Trenton, New Jersey, were merged under the name of the last-mentioned organization. The company will continue to deal in certain specialties extensively used in the rubber industry, such as aluminum flake, aniline colors, antimony, barytes, litharge, lithopone, oxide of zinc, etc. Mr. Fulper, who has been in the rubber supply business for the past twenty years, will act as vice-president and manager of the rubber supply department and have full charge of the Trenton offices.

The Acme Rubber Manufacturing Co., Trenton, continues to operate a night force in its millroom and molded-hose department.

General C. Edward Murray and his bride recently returned from their wedding tour of the West Indian Islands, the Panama Canal, and the Pacific Coast. General Murray is president of the Crescent Insulated Wire & Cable Co., Trenton, and is assisted in its management by J. Cornell Murray. C. E. Murray, Jr., is in charge of affairs of the Empire Rubber Manufacturing Co.

The Essex Rubber Co., Trenton, continues to be very busy in its rubber sole and heel department. The monthly dinners of the department and factory managers have become an attractive feature, and the management seems much pleased at the unity of interest and coordination of work being cultivated through the medium of these meetings.

The Globe Tire Co., Trenton, as well as the United & Globe Rubber Co., is now under the management and direction of John S. Broughton, who, despite the continued demand upon his time in factory direction, is still able to visit the important clients of his companies.

Henry N. Young and family left recently for Camden, South Carolina, to spend the remaining winter months with Mrs. Young's father, George R. Cook. Mr. Cook, besides his large interests in rubber manufacturing in Trenton and elsewhere, is president and chief stockholder in the Cook Linoleum Co., a $5,000,000-corporation, and one of the largest factories in the United States, turning out linoleum and floor coverings. Mr. Young is vice-president of the Hamilton Rubber Manufacturing Co.

Charles E. Stokes, president of the Home Rubber Co., also finds time to act as director in two of Trenton's successful banking institutions, The Trenton Trust Co., and the Colonial Trust Co. Mr. Stokes was one of the organizers of the Colonial Trust Co., and a member of its first board of directors. He is proving as successful a banker as he is a rubber manufacturer.

William R. Thropp & Sons Co., Trenton, recently changed its name to William R. Thropp Sons' Co.

Both William R. Thropp Sons' Co., and John E. Thropp's Sons Co., extensive manufacturers of rubber machinery, report considerable improvement in the outlook for business, and have some good orders on hand.

Static electricity is said to have caused a small fire at the plant of the Ajax Rubber Co., Inc., Trenton. Fortunately the damage was slight.

Federal Judge Joseph L. Bodine, sitting in the United States District Court at Trenton, has granted an order for the receivers of The Empire Tire & Rubber Corporation to negotiate a $200,000 loan on their certificate, to be used in continuing the operation of the plant. Henry H. Wittstein, representing some of the creditors, argued that a curb or check should be put on the money by the court. He suggested also that the merchandise creditors have the right to place the plant on sale, to be sold to the highest bidder. C. Edward Murray, Jr., second vice-president of the Empire company, and Arthur H. Wood, president of the First National Bank, of Trenton, were appointed receivers of the plant last February.

Judgment amounting to $17,000 against United States Internal Revenue Collector Samuel Iredell has been awarded in the United States District Court at Trenton to the DeLaski & Thropp Woven Tire Co., Trenton. The company sued to recover the money from the Government because of forced payments on patents that were asserted to be worthless. The Government demanded $29,000. Of this amount—$12,000 was paid without protest. The remainder—approximately $17,000—was paid under protest. The Trenton concern set up in its defense that the royalties from the patents sold were consumed in fighting infringement suits, and in salaries and expenses to experts in demonstrating the machinery.

Jean Baptiste Denis Destribats, formerly vice-president of the Ajax Rubber Co., Inc., has been granted permission by the Court of Common Pleas to change his name to that of Louis Pierre Destribats. He has been using the latter name for some time and now has authority to do so.

Brooks & Virgin, dealers in automobile accessories, Trenton, are now handling Empire cord and fabric tires.

Isadore Richmond, owner of the Tire Shop, Trenton, is now handling Bergougnan tires in connection with the Miller products.

The Manufacturers' Tire & Supply Co. has purchased the stock of the K. & B. Auto Supply Co., 117 East Hanover street, Trenton, and will continue the store in operation. The K. & B. company was established some time ago by five Klinkowstein brothers, who were the New Jersey distributers for the Bergougnan products. Isaac Fineburg, of the Fineburg Auto Tire Co., is interested in the new concern.

A novel advertising contest was conducted recently by the United Tire Co., Trenton. An old Thermoid tire was placed in the display window and the person guessing nearest to the number of miles it had run was presented with a new tire.

Miscellaneous New Jersey Notes

George H. Dalrymple, of Passaic, receiver for the Newark Rubber Co., has been authorized by Vice-Chancellor Fielder, to accept an offer of $40,000 for the plant and equipment which the company has in Garfield. The offer was reported to the Court as made by Arthur Hughes, a Passaic real estate dealer, for various persons whom he represents.

Mrs. Agnes Dana, Bernardsville, has purchased the buildings and land of the Rubber Insulated Metals Corporation, Plainfield, for $100,000. What is to be done with the two plants has not been made public.

Edgar Wilson, president of the Dural Rubber Co., Flemington, New Jersey, recently gave an address at the annual session of the representatives of the Trenton Paper Box Co., at the Trenton Country Club.

The Paramount Rubber Co., Little Falls, New Jersey, suffered slight damage by fires last month, without incapacitating the plant. Incendiaries are believed responsible.

Charles R. McNair, of Paterson, has been appointed receiver by Federal Judge John Rellstab for the Century-Plainfield Tire Co., Plainfield, New Jersey. Frederick Stern, New York, N. Y., filed an equity bail of complaint, charging that the tire company's capital stock amounts to $100,000. Stern's claim is for $15,000 on three promissory notes. The notes are long overdue, the petition cited, and the company suffered a heavy loss through a breach of contract.

The American Division of Michelin Tire Company

The story of the Michelin Tire Co., Milltown, New Jersey, since its establishment in 1907 to the present time, is one of continuous development. This organization is one of the three subsidiaries of the parent rubber company founded in 1832

Michelin Tire Co., Milltown, New Jersey

at Clermont-Ferrand, France, but the rapid growth and large output of the Milltown factory are typical of American determination and energy. From three small buildings in 1907 to eighteen today; a plant whose equipment includes every modern device for the manufacture of a standard make of tires; and with 27 branches in the United States to extend this company's interests—all tell their own story of efficiency and progress.

In 1917, at the conclusion of the tenth year of service of this branch of the Michelin company on this side of the Atlantic, J. Hauvette-Michelin, vice-president of the Milltown organization, paid a splendid tribute to American merchandising and advertising methods, which, he said, had so materially aided in the development of this great company. European factories for the carrying forward of this successful tire-manufacturing enterprise, were established in London, England, in 1904, and in Turin, Italy, in 1906.

The Rubber Trade in Rhode Island

The rubber manufacturing concerns throughout Rhode Island may well be said to be marking time, to be patiently waiting for the turning of the wheel of time to see what the immediate future may have in store. The year 1921 was a particularly trying one in many respects both for the management and the employes of the several companies, but the new year has been entered upon with a spirit of cheerful optimism that is encouraging, everyone hoping for a material improvement over the previous twelve months.

With the great increase in the use of motor vehicles and the resultant increased demand for automobile tires, there has been a closer affiliation during the last few years between the rubber and the cotton industries. Consequently, the unsettled conditions of the rubber industry are being reflected, indirectly though it may be, upon the cotton branch of the textile industry. This is seen in the reduction in the wage schedules in the cotton plants of Rhode Island as well as other textile centers of New England, among which are a number where the production of fabrics for tires is an important, if not the principal, feature.

A wage cut of approximately twenty per cent became effective in a majority of the cotton plants of Rhode Island on January 22, and among the reasons given for this reduction was the insistent demand of automobile tire manufacturers for a lower-priced fabric. It is said that the recent cut in the price of automobile tires has led the manufacturers to ask the cotton fabric manufacturers for lower rates and, in order to accede to this demand, a substantial wage cut was necessary. Illustrative of this, southern competition is one of the big points stressed, cotton manufacturers here claiming that while the average wage of operatives in New England is about $21 a week, it is less than $14 in the South, which they claim gives the South a 33⅓ per cent differential in labor costs alone. Among the larger of the cotton plants making tire fabrics that have already made wage reductions are the Jenckes Spinning Company, the Ninigret Mills and the Mount Hope Spinning Mill.

While the closing month of the old year indicated a slight betterment in the working conditions at the plant of the National India Rubber Co., Bristol, Rhode Island, there has not yet been a sufficient business awakening to demand the operation of the factory on a normal basis, although the management is making the most of possibilities favorable to the operatives because of the general depression of the past year. In some of the departments there are said to be orders in hand that will keep things moving along for a considerable time, in consequence of which there is much encouragement for the current year. The entire plant was closed on December 26, on which date Christmas was celebrated, and on December 31 the annual shut-down for the taking of inventory occurred. As scheduled this occupied one week, after which, according to a previous announcement, the wire and keds divisions resumed operations on January 9.

At the Davol Rubber Co.'s plant, Point street, Providence, Rhode Island, business was very good the last month of the old year, showing a decided improvement over the preceding months, although this concern because of its diversity of production, especially with its lines of druggists' sundries, has not felt the general depression to so great an extent as many of the other factories. The firm is gradually taking over the possession of its large five-story building on the corner of Point and Eddy streets, which is being devoted to storage, packing, shipping and similar purposes. It is understood that in the near future a complete rearrangement of the administrative and shipping departments is to be made. When this is done there will also be an enlargement of a number of the factory departments that have outgrown their present space and facilities.

The American Wringer Co., at Woonsocket, began taking its annual inventory on January 2, in consequence of which the entire plant was closed for two weeks.

After filing an appeal from the decision of the Probate Court of Bristol admitting to probate what purported to be the last will and testament of the late Colonel Samuel Pomeroy Colt, and further requesting that the appeal be tried before a jury, Russell G. Colt and Roswell C. Colt have abandoned their attempt to break and nullify their father's will.

Colonel Colt's will was admitted to probate in Bristol, September 6, following the death of the financier, August 12. On October 14, the two sons claimed an appeal and one week later filed with the Superior Court in Providence a statement of their reasons for appealing. These included allegations that their father was of unsound mind when the will was executed; that he was induced to sign it through undue influence, and that he executed the document "under a mistake of fact." No intimation was given of whom the Colts accused of having unduly influenced their father. The statement asked that the decree of the Bristol Probate Court be reversed and the will declared null and void. Discontinuance of the appeal that was pending in the Superior Court will mean that the will as allowed by the Bristol Probate Court will stand.

An involuntary petition in bankruptcy has been filed against Joseph M. Gibbons of Providence in the United States Court for the District of Rhode Island. The petitioning creditors were Firestone Tire & Rubber Co., $100; Associated Tire Corp., $50; Braender Rubber & Tire Co., $752. Elisha C. Mowry was appointed by Judge Arthur L. Brown as receiver under bond of $1,000.

A suit on book account has been filed in the Superior Court at Providence by the Victor Rubber Co. of Springfield, Ohio, against the J. M. Gibbons Tire Co. of Providence. Damages are laid in the sum of $2,000, and the basis of the claim is for $912.34, alleged to be due on book account.

The B. F. Goodrich Rubber Co. has entered suit in the Superior Court at Providence against the F. A. Decker Co. of Providence. The claim involved is for $754 alleged to be due on book account, and damages are laid at $1,000.

The Continental Rubber Works, a Pennsylvania corporation, has filed a suit in the Superior Court, Providence, against Miller's, Inc., of Providence, to recover the price of a lot of inner tubes which the plaintiff alleges in its declaration was ordered July 1. The amount due is placed at $1,751.65. Miller's, Inc., refused to accept the tubes or to pay for the same, it is alleged, and damages are laid in the writ at $3,000.

Among the recent appointments and changes that have been made at the factory of the National India Rubber Co., at Bristol, are the following: William K. McMillan to be foreman of the carton and printing department, with S. Simpson as assistant foreman; William J. Brahmstedt to be section foreman in the men's making department, in charge of the machine rack system; Sherman Edgett to be assistant foreman of the barbed wire department.

Ralph S. Bartlett, industrial relations manager of the Millville rubber plant of the Woonsocket Rubber Co., has taken charge of similar work at the Lawrence Felting Co.'s plant at Millville. Mr. Bartlett has held this position at the rubber plant for the last two years and is fully capable of handling the extra duties assigned him.

According to their statements filed at the office of the City Clerk, Harry A. Davis and Carl G. Anderson are the owners of the Narragansett Vulcanizing Works, 271 Richmond street, Providence.

The Central Automobile Tire Co. has purchased the five-story brick business building located at Fountain, Eddy and Worcester streets, Providence, covering an area of 12,000 square feet. The purchase price is said to have been about $219,000. The building is known as the Enterprise building.

Respro, Inc., is the name of a concern that has been granted a charter under the laws of Rhode Island. It will be located in

Cranston and will manufacture rubber goods, woven fabrics, auto tires, electrical goods and other products and materials made from rubber. The authorized capital is $100,000 in addition to 40,000 shares of stock without par value. The incorporators are Eugene A. Kingman, Walter A. Edwards and Kenneth J. Tanner.

The Broadway Tires Sales Co., 113 Broadway, Providence, is conducted by Dominick A. Fazzano of Cranston, and Egidio Clampittiello of Providence, according to their statement filed at the City Clerk's office.

Joseph P. Ryan has filed a statement at the City Clerk's office that he is the sole owner of the Perfection Tire Sales Co., 297 Fountain street, Providence.

The Rubber Trade in Massachusetts

Manufactured Goods

Although more activity was noticeable toward the end of the month, the seasonal restriction of trade which characterizes the first and last months of the calendar year has continued rather longer than usual. Dealers' stocks in most lines of rubber goods are known to be very low, however, and with the inventory period passed and prices fixed for the season, active buying is anticipated soon. This has already begun in the case of rubber footwear, continued winter weather over large areas of the country having relieved retailers of considerable of their stock. Footwear plants are operating very near capacity.

Automobile registrations are especially heavy in Massachusetts this year and the tire business is good for this season. Insulated wire continues in demand following the disastrous sleet storm in December which caused damage to wire systems of every sort that will require several months to repair. The heel and sole business remains excellent, while mechanical goods production at about 75 per cent of normal still awaits a more pronounced upward swing of general business. Rubber manufacturers generally have put their plants, machinery and equipment into excellent condition and without exception are looking forward to an active and successful year.

Textile Situation Encouraging

The cotton textile industry, in which tire fabrics figure so largely, is now on a sounder basis, New Bedford and Fall River mills are running at about 80 per cent capacity and increased output during 1922 seems assured. On the whole, remarkable progress has been made during the past year in the standardizing of monetary, labor and manufacturing values. While the collapse in cotton prices forced liquidation, the demand for all kinds of fabric has been sufficient to keep most mills in operation, giving employment to many of their operatives even though the mills were not able to earn a substantial profit. With partial aid from accumulated surpluses, however, they have been able to pay at least the regular quarterly dividends on common and preferred stocks, while a few paid special dividends.

The new year finds the textile industry with most of the overhead removed, with a sounder financial standing, with the markets for raw cotton and cotton goods very steady, and with general conditions such that a steady increase in demand and output seems inevitable. The wage question is the uncertain feature, and there are many opinions among manufacturers as to the proper course, ranging from no cut at all to a cut of 25 per cent.

The Bedaux Point System in a Rubber Factory

In the general attempt to reduce production costs, labor efficiency is the most important question. Early in 1921 labor leaped into relative efficiency, but employers everywhere say that labor is again stalling on the job, and unfortunately this seems likely to increase. Cuts in wage rates are regarded as the most certain way to reduce production costs, yet cuts which reduce the worker's total earnings breed discontent. That it is possible to cut wages and at the same time so increase labor efficiency as to increase the earnings of employes has been proved by the Hood Rubber Co., Watertown, and nationally-known firms in other lines.

As the most important measure of a labor policy is its result in production, the objects achieved thus far at the Hood plant seem to indicate that the policy pursued last year has proved its merit. This policy is an application of the Bedaux point system, which undertakes to base wages on the amount of human energy put forth by the workers. The time unit is the minute, and is divided into three parts. One part is the actual energy-spending part of the minute on the work in hand. This is measured with a stop-watch. To this are added allowances for rest and delay, varying for different jobs and scientifically determined with the utmost care. The time thus arrived at is always one minute and constitutes a "point" in the Bedaux system.

Sixty "points" per hour is normal. Basic wages are set at the current rates for similar work in the locality and when a worker reaches the sixty-point per hour output, he is put onto basic wages. Prior to this, while learning, he is perhaps placed at 85 per cent of the basic wage. Any worker not reaching normal output in a reasonable length of time is subject to a shift to an easier job.

Production in excess of normal is paid for at proportional rates and the extra amount earned in this way is divided, 75 per cent going directly to the worker and 25 per cent being divided among all who have contributed to make it possible for the worker to exceed normal output.

It is claimed that under the Bedaux plan workers commonly reach 80 and 85 points per hour, and that individual records of 100 to 125 points are not uncommon. The record of each worker is posted daily, and of each gang or department once a week. This gives the worker a constant measure of his efficiency and the foreman a much better index to what is going on and to where any trouble lies.

Basic rates continue as long as the jobs remain unchanged, the firm contracting with the worker to this end. The result has been that although wage reductions of about 18 per cent have been made by the Hood Rubber Co., the actual earnings of employes have increased 27 per cent. As the extra cost in clerical work is compensated by the savings in production cost, both employer and employe look upon the system with favor.

Although not primarily an efficiency plan, but rather a new and apparently effective method for computing wage payments, the Bedaux point system as installed in the Hood plant is promoting greater labor efficiency. It works to best advantage where the amount of hand work is greatest. Women workers, as a rule, lend themselves to it more readily than men, because they are generally more satisfied to work by rate. Still, as introduced by trained engineers keenly alive to the human element in factory relations, the plan is generally made acceptable to the workers with little friction.

Boston Notes

At the last annual meeting of the Boston Safety Council, held at Hotel Victoria on December 27, 1921, Charles F. Horan, safety director of the Hood Rubber Co., Watertown, was elected vice-president. G. E. Sanford, safety director of the General Electric Co., West Lynn, was elected a member of the executive committee. It was the sense of the meeting that the Massachusetts Safety Council should plan for a two-day conference to be held next April in cooperation with the State Department of Public Safety and of Labor and Industries.

The annual sales convention and dinner of the Panther Rubber Co., and the Panco Co., Stoughton, Massachusetts, was held on the evening of January 13 at the American House, Boston.

Salesmen from all parts of the United States attended to discuss sales and advertising plans for 1922. Dudley Freeman, general sales manager, acted as toastmaster. Among the speakers were: Frank Bernstein, president; Meyer Marcus, vice-president; William Bernstein, treasurer; H. J. Lucier, chairman of the finance board, and W. W. Saxe, advertising representative.

On the evening of January 12, George E. Hall, president of the Boston Woven Hose & Rubber Co., gave a banquet at the Algonquin Club in honor of George H. Burgess, who has completed twenty-five years of service with the company and who for several years has been assistant treasurer. Mr. Hall spoke warmly of the service Mr. Burgess had rendered the company, in assuming the greater part of the responsibility for the firm's finances during the illness of the treasurer, Henry B. Sprague. A colored jazz orchestra furnished music throughout the evening, and solos were rendered by R. J. Owens, sales manager of the company; Harry G. Johnson, manufacturing superintendent, and J. L. McMahon, purchasing agent.

In order to secure the greatest efficiency in handling arrivals and deliveries, the H. T. West Co., dealer in oils and naval stores, has recently moved its office from 148 State street, Boston, to its plant at 132 Library street, Chelsea, Massachusetts. There it has storage tanks for petroleum and vegetable oils, adequate side tracks, and warehouses for barreling and storing liquid and solid goods, also a fleet of five trucks. Large stocks of carbon black, rosin, rosin oils, turpentine, pitches, waxes and linseed oil are maintained for the rubber trade.

Miscellaneous Massachusetts Notes

George L. Finch, superintendent of the Hood Rubber Co., Watertown, Massachusetts, and a member of the board of directors of the Water Power League of America, Inc., states that the future policy of the League, regarding water power development under the Federal Power Act, will be discussed at the meeting to be held February 7 and 8 at the Engineering Societies Building, New York, N. Y. New England manufacturers feel that they must take an active part in order to protect their interests in the power sites at Niagara Falls, and those proposed on the St. Lawrence River.

George B. Hendrick has resigned as vice-president of the Massachusetts Chamber of Commerce to become assistant sales manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts. Mr. Hendrick has been publicity manager of the Fisk company for several years.

A new member of the Crocker System, New England's affiliated rubber stores, is Crocker-Hobday Rubber Co., 50 Taunton Green, Taunton, Massachusetts, which recently incorporated with the following officers: Edward O. Hobday, president; George I. Crocker, treasurer; and Fred A. Jewell, secretary. The concern will retail rubber goods and any other goods generally found in such a store, but will also sell goods at wholesale.

During the latter part of November the reclaiming plant of the Boston Woven Hose & Rubber Co., at Plymouth, was closed, owing to conditions in the crude rubber market. The closing is temporary, however, and it is anticipated that the plant will soon be in operation again.

The Wood Elastic Cord Co., Stoughton, Massachusetts, for purposes of expansion, has incorporated as the Massachusetts Webbing Co., but there will be no change in ownership or policy. The entire product has been sold through the J. W. Wood Elastic Web Co.

The Metropolitan Air Goods Co., manufacturers of pneumatic rubber goods, Athol, Massachusetts, is now located in a new $50,000 plant on Marble street, where it has every modern facility for turning out its particular line of goods. L. S. Starrett, president of the Starrett Tool Co., heads the company, while R. A. Whall is treasurer and general manager. Sales for the year 1921 were only 27 per cent below those for the abnormal year 1920. Several months, including December, went ahead of corresponding months in 1920. Advance orders and inquiries indicate that 1922 will be the firm's record year.

Early in January a four-day conference of salesmen, foremen and executives of the Tyer Rubber Co., Andover, Massachusetts, was held to discuss manufacturing and sales problems of the year 1922. A dinner at Shawsheen Manor was tendered by the firm to those who had assembled for the conference, and Frederick H. Jones, president of the company, was the chief speaker. He is optimistic regarding the outlook and believes this will be the firm's most successful year.

Frank E. Randall, manufacturer of thickness gages, of Waltham, Massachusetts, announces that he is perfecting a four-inch dial gage for measuring the thickness of rubber as there is a call for a heavier gage for some grades of work.

Among the business men enlisted in the Red Cross campaign, the name of Frederick C. Hood, of the Hood Rubber Co., Watertown, Massachusetts, was noted, as representing the rubber industry.

The Fellsway Rubber Co., Medford, Massachusetts, has recently completed an addition to its plant, providing more equipment to take care of its growing business, especially the demand for rubber heels, which has kept the plant going both day and night. The outlook in this line is regarded as very promising.

L. I. Fitzgerald, formerly of The Goodyear Tire & Rubber Co. selling force and more recently of the O'Sullivan Rubber Co., has joined the sales organization of the Fellsway Rubber Co., 232 Purchase street, Boston, Massachusetts. While he will carry the firm's full line, special attention will be devoted to selling the new "Travelite" patented rubber heel to shoe factories and the repair trade. This heel was described in the December issue of THE INDIA RUBBER WORLD.

Optimistic reports from the Cambridge Rubber Co., Cambridge, state that with increasing output considerable additional floor-space has become necessary at the company's plant. The production here of canvas and rubber footwear has advanced 100 per cent, while the manufacture of rubbers, gaiters, and lumbermen's heavy overshoes has met with marked success. All indications are said to be favorable for the coming season.

The Rubber Trade in Ohio

Manufactured Goods

A general revival of business is increasing the production of mechanical goods, and it is reasonable to expect this branch of the rubber industry to go back to somewhere near normal production during 1922. The same is true of reclaimed rubber, increased demand having already brought about a new interest.

Although the average eight per cent decrease in the price of rubber footwear, announced by manufacturers at the beginning of the year, is not at all what the dealers expected, it is believed that the salesmen can convince them that the expected 20 or 30 per cent decline was unreasonable, and secure sufficient orders to bring production back to a normal basis. The manufacturers' argument is that at no time did the price of rubber footwear soar as did the price of leather footwear, and therefore a similar decline could not be expected. A preliminary survey of the trade shows that stocks generally are low and that merchants to a great extent are ordering in large quantities by mail. During December mail orders dropped off in anticipation of a decline, but probably would have held up had it been known that the reduction was to be comparatively small.

Akron Expects a Banner Year

The experiences of the past year in the rubber industry give bright promise for 1922, according to the best opinion available in the Rubber City. At present the factories are in the midst of

a big spring order business and all other indications point to a prosperous selling season for the industry as a whole.

The past year proved beyond question that the motor vehicle is a necessity, not a luxury. If the automobile owners of the country were at any time to cease operating their cars, it would have been during the depression of 1921. Instead, tire consumption the past year absorbed the surplus of 10,000,000 automobile tires in stock when the depression came and the further demand resulted in the largest unit output ever registered in Akron.

While the world as a whole believed the rubber industry to be suffering greatly from the depression, inventories were being converted into cash, bank loans were being paid and operations were being maintained on a scale which makes the past year outstanding in the history of the industry. During this period more than 1,000,000 new motor vehicles were registered in the United States, a 12 per cent increase over the registrations of 1920. With such an increase in a period of depression it is safe to state that the automobile field has not yet reached the saturation point by any means, and that a return of normal business will see an even greater increase in automobile ownership with a resulting increase in tire demand.

All previous unit production records have been broken in Akron this year. But the units produced have been small sizes rather than heavy pneumatic and solid truck tires. Many of the cars using these latter tires have been stored. But a return of prosperity will bring back these cars into service and this tire demand, in addition to that which has broken unit production records means more tires. The factories are ready. Efficiency has increased, extravagant methods are abandoned and every factory is stripped to the gears for the race which can be expected in a field of the keenest competition.

Wages have been brought to a point where they compare with those in other lines. Sales costs are being studied and every effort is being made to reduce this rather large item. Expensive branches, once thought to be essential in tire distribution, have long been abandoned. Bank loans have been reduced, inventories worked off, and the entire stage is set for the stockholders again to begin operating their factories and the general automobile owning public to reap the rewards of the new principles which have become commonplaces in the tire industry.

Akron University Graduates Rubber Chemists

The University of Akron will graduate seven men from the rubber chemistry course this year, and indications are that during the next few years the course will gain in popularity. At the present time no post-graduate students are working for masters' degrees in the course, but Professor H. E. Simmons believes that with the growing importance of rubber chemistry it will be possible to build up a good graduate school.

The Akron University course in rubber chemistry is the only one given in any regular university, as far as is known to the Akron faculty. It was instituted in 1909 by Professor C. M. Knight, and Professor Simmons came to the university to take charge of the work the following year. At the time it was instituted it was believed that the growing demand for rubber engineers in Akron, then and now the rubber center of the world, would justify the expenditure of tax payers' money for their training. Since its establishment at least fifty engineers have been graduated, and to justify its existence each and every man has had no difficulty in finding a position immediately upon his graduation.

The primary purpose of the course is to fit men for the rubber factory laboratory. Thus equipped they do not have to devote six months or a year's time to familiarizing themselves with the rudiments of rubber chemistry, which gives them an advantage over the chemists who have not had a similar training. About one-half of the graduates have remained in Akron, while the others are connected with rubber factories in all parts of the United States.

India Tire Production Increasing

D. A. Grubb, secretary and general sales manager of The India Tire & Rubber Co., was one of the founders of the company and has been one of the men largely responsible for its progress during the last four years. Men associated with Mr. Grubb attribute his success as a sales manager primarily to his ability to judge human nature and to an intimate knowledge of the wants of the automobile owner.

D. A. Grubb

The India company anticipates the biggest year in its history during 1922. The year 1921 was better than 1920 in both number of units produced and value of sales, and sales during the past sixty days have been double those of the corresponding period of last year and far exceed sales during any similar period in the history of the company. Orders for more than 18,000 casings and 20,000 tubes were on hand when the year opened, with every prospect of a constantly increasing business during 1922. The company is operating its mill room four nights a week.

While no particular effort has been made to obtain export business, the company during the past month has received large orders from India, Australia, England, New Zealand and Sweden. Indications are that the export business of the company will be doubled during the present year.

Protective Tariff on Foreign Tires Opposed

The attitude of the Akron tire manufacturers against a protective tariff on tires is due to the belief that retaliatory measures will be adopted by those foreign countries in which the American tire is rapidly gaining a foothold and will undo much of the missionary work which has been done. Only $2,000,000 worth of tires were imported in 1921 as compared with $55,000,000 exported during the same time, and this, rubber men point out, indicates that the industry does not require protection.

Export business is of greater importance to the industry at present than ever before. Efficiency has greatly increased in the Akron factories and as a result the demand of the American market, under the best of conditions, can be met without operating the plants at the peak to which production carried them during the war and post-war period. A much smaller number of men working in much less factory space can make the tires wanted by the American market, which leaves a large amount of factory space idle. This space can be placed in production only by sales in countries in which a start has just been made. For that reason the industry, at least in Akron, does not wish to have any handicap built up which will ultimately affect the foreign field adversely.

The Firestone Small Town Sales Policy

The importance in the automotive industry of the small-town dealers, both in tires and automobiles, is brought to the front through statistics, showing that of the 10,000,000 automobiles registered in the United States 55 per cent are owned in towns having a population of less than 5,000 and only 9 per cent are owned in cities of more than 500,000. On the basis of these figures The Firestone Tire & Rubber Co. has revamped its entire sales

and advertising policy and is now making every effort to bring Firestone products to the attention of the small-town owner through the local newspapers and by calling upon the smaller dealers.

While these figures show where American automobiles are owned, they indicate that the problem of reducing selling expense is becoming more difficult. It is well known that the sale of merchandise to the small dealers, when competition becomes keen for this business, will increase sales costs because practically the same overhead expenses are present while the size of the orders is smaller.

F. C. Allen

The Firestone company in its last annual report stated that the number of dealer accounts had shown some increase while the cost of selling had been reduced 38 per cent. Whether the statement reflects the new policy is not known, but it is doubtful if it were made after the small town sales policy had been in practice sufficiently long to give it a fair trial.

The Firestone Tire & Rubber Co. has announced that F. C. Allen, of the export department, will make a trip through the important countries of the world to study economic and trade conditions. This trip is looked upon as preliminary to a more vigorous prosecution of foreign trade on the part of the Firestone and the Firestone-Apsley companies.

Akron Notes

The Philadelphia Rubber Works Co. reports constant improvement in business, and while the plant is now operating at only approximately 35 per cent, sufficient orders are on hand to warrant an increase in factory production. It has been held best, however, to hold off increases until the future is absolutely certain. Rising crude rubber prices, coupled with the fact that all manufacturers had permitted reclaimed material to run down to the lowest possible point for inventory, are the principal causes for the better outlook.

Business during the last year has been so good and prospects for the future are so bright that officials of the American Rubber & Tire Co. believe it will be possible to start payment of common dividends during 1922. During the past year all preferred dividends have been paid, but thus far no common have been distributed since the reorganization and refinancing of the company five years ago. Business for 1921 was easily 50 per cent in excess of that of 1920, and it is generally believed that the forthcoming balance sheet and statement will show the company has earned a good profit during the past year. The company reports excellent success with a new bathing slipper placed upon the market late last fall.

Various branch managers of the Seiberling Rubber Co., Akron, Ohio, have been recently appointed. The names of these officials, and the location of their respective branches, have been announced as follows: W. A. Golden, Boston; J. E. Vail, Philadelphia; H. I. Walters, Atlanta; J. L. Cochrun, Detroit; R. L. Richey, Kansas City; J. E. Argus, Los Angeles; W. V. Aydelotte, New York; H. E. Langdon, St. Louis; L. C. Gates, Chicago; W. H. Ector, Dallas; W. F. Ong, Cincinnati; E. W. Luthey, Minneapolis; C. A. Jones, Akron.

The Miller Rubber Co. is reported to have received several large original equipment orders which indicates that this part of the Miller business will be very good during 1922 and that the automobile industry is again showing signs of a real revival. The source of the business has not been disclosed. The company is showing signs of preparing for one of the largest year's business in its history, following 1921, when production in units was larger than during any previous year. Some men are being added to the working forces from former employes. The company will endeavor to add slowly to the efficient force which it now has in the plant.

The Rare Metal Products Co., Belleville, New Jersey, manufacturer of special chemicals and antimony sulphuret, announces the appointment of the Tyler Patterson Co., Cleveland, as its Ohio representative. The latter firm, with headquarters in Akron, will carry a full supply of the Rare Metal company's goods.

Announcement of the manufacture of a new army dirigible by The Goodyear Tire & Rubber Co. has been made. The new ship will contain several new transmission features which are the inventions of Herman Kraft, chief aeronautical engineer of The Goodyear company and John Friis, of the Wellman-Seaver-Morgan Co. It will be 170 feet long, will have a gas capacity of 180,000 cubic feet, a cruising radius of fourteen hours' continuous flight and a maximum speed of 60 miles an hour. The machine will be assembled in the spring at the Wingfoot aviation station, which has been put in preparation for the new work, and will be followed by a second ship during the summer.

William F. O'Neil, vice-president and general manager of the General Tire & Rubber Co., Akron, has been made president of the new bank resulting from the merger of the Ohio Savings & Trust Co., of which he was president, and the State Savings & Trust Co., of which B. A. Shriber, one of the rubber city's closest students of the rubber industry, was formerly head. The Ohio Savings & Trust Co. was founded by Frank A. Seiberling, formerly president of The Goodyear Tire & Rubber Co.

B. F. Pickens, of the sales department of the Amazon Rubber Co., Akron, has been placed in charge of sales promotion and publicity. With increasing business the company is looking towards advertising and publicity as an essential for success.

Rubber manufacturers, who have been among those most deeply interested, were again able to complete a successful campaign for the Better Akron Federation, which supports fifteen charitable and semi-charitable organizations, including the Charity Organization, the Union Mission, and the Young Men's and Young Women's Christian Associations. A total of $287,000 was subscribed. On the committee appointed to raise the money were Charles A. Stillman, secretary of The Goodyear Tire & Rubber Co., Harvey S. Firestone and C. B. Raymond. The larger rubber companies made their own canvasses in their factories and each raised between $25,000 and $40,000.

The Mohawk Rubber Co., Akron, enters the year with production at better than 75 per cent of normal, and is constantly adding men to meet increased demand for goods. At the beginning of the year the company was making approximately 450 tires a day with prospects of going over the 500 or 550 mark before the end of January.

The National Sulphur Co. has more than half finished its first plant unit in Akron. It is expected that operations with several hundred men will start during the first quarter of 1922. Much of the product is sold to the rubber factories of the country.

H. C. Miller and C. E. Cook have been appointed assistant general sales managers by The B. F. Goodrich Co., Akron. Mr. Miller will have jurisdiction over all tire sales and Mr. Cook will have charge of all mechanical goods, footwear, druggists' sundries and rubber products sales. Mr. Miller is one of the most familiar figures in the rubber industry, having been with the Goodrich company more than eighteen years, while Mr. Cook has been with the company almost 20 years.

H. E. Keller, for the past 18 years connected with The B. F. Goodrich Co., has been named sales manager of the Diamond

Rubber Co., Inc., a subsidiary of the Goodrich company. Mr. Keller was until recently in the Goodrich sales department under W. O. Rutherford.

Dr. W. C. Geer, vice-president of The B. F. Goodrich Co., has delivered a series of lectures on rubber before various organizations in the United States. Recently he spoke at the University of Wisconsin.

The Gregory Rubber Co., Akron, manufacturer of rubber specialties, reported at its annual meeting that sales for the past year amounted to $94,000, which is at least 10 per cent in excess of sales during the previous year. All directors and officers were reelected for the ensuing year. Prospects for 1922 are better than those a year ago for 1921, according to officers of the company.

A. N. Burckhart has been elected president of the Interlocking Cord Tire Co. to succeed Edward Kohl, who was largely instrumental in reorganizing the company and lifting the receivership into which the company was placed late in 1920. Mr. Burckhart has been general manager of the company. Mr. Kohl was elected vice-president and will act as purchasing agent. During the last year the company showed a small profit. At the present time approximately 100 tires a day are being made with prospects for increases. C. A. Ruckamp was elected secretary and Charles Fornacker, treasurer. Directors besides the officers are: A. W. Sweeney, B. F. Lepper, Ralph W. Barr, W. E. Lybarger, W. H. Marston, R. E. Cartledge, W. E. Fulton, F. S. Prior and B. H. Hood.

John Lancaster, formerly in the crude rubber department of The Goodyear Tire & Rubber Co, Akron, has joined French & Handy, crude rubber brokers, New York, N. Y.

W. D. Shilts, formerly chairman of the board of control of The Goodyear Tire & Rubber Co., and now in charge of branch accounting, has gone to London, England, for several months' study of English conditions.

The Oldfield Tire Co., Akron, announces that sales for the last quarter of 1921 were 135 per cent in excess of sales during the corresponding period of 1920. The company during the year established a large number of agencies among whom are 55 dealers who buy in carload lots. This is the principal reason for the mounting of sales. At the offices of the company it is officially denied that E. W. BeSaw, vice-president and general manager, has been made president.

Ohio Notes

By February 1 the Akron Universal Tire & Rubber Co., of Medina, Ohio, expects that its factory buildings will be completed, and machinery installed, when this company, previously selling tires made for it by other firms, will then be in a position to manufacture its own. Two brands of tires, to be known as "Medina" and "Bee Town," 30 by 3 and 30 by 3½, respectively, will be produced, and will be made a specialty. "Autco-Keck" safety tire boots are now being manufactured, as their merits have given them a ready sale. No inner tubes, however, will be produced, as a contract for a supply has been made with another firm. Officials of the Akron Universal Tire & Rubber Co. include: R. E. Kimmel, president; D. R. Pelton, vice-president; R. J. Hyde, treasurer; and E. J. Schwartz, secretary and general manager.

A new building has just been completed for the Pharis Tire & Rubber Co., manufacturers of tires and tubes at Newark, Ohio. Extensive additions to machinery already installed include the following: Three giant mixing mills; a new calender; and new tire building machines.

This company, which has been carrying on operations on a rather small scale, now finds it necessary to enlarge its tube department to a capacity of 1,000 inner tubes a day, while 1,000 tires a day will also be produced. At the plant a complete line of tires and tubes of all sizes in fabrics and cords is built, as well as red and grey inner tubes. Officials of the company include: A. R. Lindorf, president; C. H. Otto Meyer, vice-president; Charles O. C. Lindrooth, secretary; R. S. Wyeth, treasurer, and Carl Pharis, general manager.

Franklin D. Jacobs, who is well known in the hardware and foundry supply trade, and has for many years been connected with the Osborn Manufacturing Co., Cleveland, Ohio, has recovered from his recent illness, and is able to resume his work as special sales representative of the Osborn company. His firm, which has branches in Brooklyn, Chicago, Detroit, and San Francisco, manufactures foundry molding, machine brushes and brooms for every purpose, and foundry and platers' supplies. Officers of the organization include: Franklin G. Smith, president; H. R. Atwater, vice-president; E. S. Carman, secretary and chief engineer; and Donald Payne, advertising manager.

F. D. Jacobs

The Marathon Tire & Rubber Co., at Cuyahoga Falls, has continued to obtain sufficient orders to keep the plant running eighteen hours a day with every prospect to keep up this pace during the early part of the year at least.

W. M. Scott, receiver for The Owen Tire & Rubber Co., of Bedford, has sued officers of the company for an aggregate of $240,000 which the petition, filed in the Common Pleas Court of Cleveland, asserts is due the company. The Owen Tire & Rubber Co. was organized during the last year of the war, and some production was carried on following its organization and sale of stock.

Assets of The Master Tire & Rubber Co., Dayton, Ohio, which recently went into receivership, are said to be larger than the amount elsewhere stated as being $225,087.60. Additional assets include certain accounts, bills receivable, etc., which were not appraised in the original inventory. It is possible that a reorganization of the company may later develop, as the "Master" cord tire is found to be an excellent make, and with a good market. Robert E. Cowden is receiver for the company.

"Whale-Bone-Ite" Toilet Seat of Rubber Composition

The "Whale-Bone-Ite" toilet seat is made of rubber composition, finished to resemble mahogany, and is furnished in a number of up-to-date models to fit standard bowls. Such a seat is entirely sanitary, will not absorb odors, is unaffected by chemicals, and can be made absolutely aseptic by wiping off with diluted alcohol. The hinge used is the so-called invisible.—The Brunswick-Balke-Collender Co., 623 Wabash avenue, Chicago, Illinois.

Mid-Western Notes

With a view to establishing closer relations with their jobbers and to serve as a distributing center for their products in the Middle West, the Buffalo Weaving & Belting Co., Buffalo, New York, with branches in New York, San Francisco, and London, England, opened on the first of January another branch at 229 West Lake street, Chicago, Illinois. Here are being carried complete stocks of the company's "R. F. & C." brand of solid-woven rubber belting, rubber sheet packings, rubber mattings, etc., as well as white-woven cotton belting, cotton webbings, twines, etc. Those in charge of the new branch are R. H. Geier and L. H. Winne, both for twenty-five years well known to the western rubber industry, and recently connected with W. H. Salisbury & Co., of Chicago.

One of the western rubber companies which does proofing of all kinds, and also makes raincoats and rubber hospital sheeting is the Kinzie Rubber & Manufacturing Co., 1514-24 West Kinzie street, Chicago, Illinois. L. J. Ulber is manager of the organization.

E. E. Dearth, formerly secretary and treasurer of the New Jersey Car Spring & Rubber Co., Inc., Jersey City, New Jersey, is now with the Federal Division of The Fisk Rubber Co., at its Milwaukee, Wisconsin, plant.

J. F. Fishburn has been placed in charge of a new branch which has been opened by The India Tire & Rubber Co., at 142 Oneida street, Milwaukee, Wisconsin. Mr. Fishburn was formerly connected with the sales department of the company at its home office at Mogadore, Ohio.

Increasing business has necessitated the construction of another factory for the Bernard Toy Co., Inc., whose general offices are at 2755-65 West Fort street, Detroit, Michigan. The new Detroit plant, now approaching completion, is modern in every respect, and the most efficient methods will be utilized in the manufacture daily of from 100,000 to 125,000 toy balloons. These constitute the only rubber goods manufactured by this company, who have other plants also at Ashland, Ohio, and Ann Arbor, Michigan. Charles E. Barnard is president of the organization.

The First National Tire & Reliner Co., Grand Rapids, Michigan, has recently completed an arrangement with the Derby Tire Co., Minneapolis, Minnesota, whereby it becomes the sole manufacturer and distributer of the "Airless" vulcanizing core for giant truck tires. This concern also makes reliners and skived shoes from pulled fabric.

L. R. Jackson has been appointed district manager at Detroit, Michigan, for the Firestone Tire & Rubber Co., succeeding G. A. Richards. He was formerly northwestern district manager with headquarters at Minneapolis, Minnesota.

The Rubber Trade on the Pacific Coast

Manufactured Goods

A generally satisfactory condition in practically all lines is reported in the rubber trade on the Pacific Coast. The holiday season made much less of a setback than many had expected. In some lines, notably tires, business for the past month has been exceptionally good. The spring-dating plan has proved a decided spur to business. Most of the companies have been giving dealers three months' credit on all orders placed in bulk during December, January and February, instead of the usual 30 days' credit, and buyers have not been slow to take advantage of the offer in replenishing stocks. The Goodyear Tire & Rubber Company of California has been offering a four-months dating beginning November 1, 1921. Factories and factory branches report dealers' tire stocks pretty well depleted.

Revival of mining, now fairly begun, is being watched with keen interest by rubber manufacturers and dealers, and fair-size sales are reported of stacker, conveyor, dredger, concentrator, and plain belting; as also air-drill, air-tool, water and steam hose. There is a good-size demand for gaskets, pump valves, and packings.

The building trades are quite busy all along the Coast and fairly active in the interior States, and the outlook is bright for spring business. Hence in a variety of mechanical rubber goods used in the building trades there has been of late very good dealing, one of the largest rubber supply houses on the Coast reporting a decided increase in business for January, 1922, over January, 1921.

The expected slowing up in druggists' sundries around the first of the year was not very marked, and already salesmen for factory branches report a very encouraging inquiry for goods for early spring delivery. The rubber shoe trade is generally quiet, although heels are going strong. A steady and increasing demand is reported for golf balls and general sporting goods of rubber.

Agents of rubber machinery concerns in the East and Mid-West report a fair recent business and excellent prospects. Banks report collections somewhat slow in the Northwest.

Los Angeles

A. F. Osterloh, vice-president and general manager of the Goodyear Tire & Rubber Company of California, Los Angeles, California, reports the business done by the big Los Angeles mills for the year ended December 31, 1921, "as being highly satisfactory." He states the rubber and cotton mills, with the city service branch, now employ 1,450, the monthly pay roll being $180,000, and 1921's total $2,300,000. The exact production for 1921 was 612,578 tires and 632,324 tubes, in addition to which there was a very large output of repair materials and accessories in general. The company's cotton mills turned out 2,073,685 pounds of tire fabric. The present monthly production is 160,000 pounds. The bulk of the cotton is long-staple from Imperial Valley, California, and Salt River Valley, Arizona; and practically all the crude rubber for the tire mills comes from the company's plantation in Sumatra by direct shipment.

Mr. Osterloh recently made a three weeks' trip covering 5,000 miles, during which he visited all the western branches of the Goodyear (California) company, including San Francisco, Fresno, Portland, Seattle, Spokane, Butte, Denver, and Salt Lake. At all points he found things on the up-grade, he reports, and a fine prospect for increasing sales. M. S. Kelley, comptroller of the company, has also been appointed treasurer to succeed W. A. M. Vaughn, and in addition has been elected a director. W. I. Lyon, manager of the legal department, will also be secretary, assuming the work done also by Mr. Vaughn.

Mid-January production at the Goodyear plant was 2,500 casings and 2,700 tubes daily. Goodyear tires and other products have been displayed in windows during the past month by 165 Los Angeles merchants with the slogan, "Los Angeles made for Western trade."

The Brunswick-Balke-Collender Co., Chicago, Illinois, has closed a deal with Guasti, House & Giulii, Inc., Los Angeles, California, which marks a radical departure from the policy of the Brunswick concern in jobbing its own lines and incidentally involves the selling of over $3,000,000 worth of tires. The exceptional financial and mercantile showing made by the Los Angeles concern proved a powerful factor in its selection as exclusive distributer of Brunswick tires in southern California.

H. F. Davenport, secretary and general manager of the Brunswick-Balke-Collender Co., manufacturer of tires and hard rubber goods, Chicago, Illinois, has been spending his annual vacation in southern California.

The Samson Tire & Rubber Co., Los Angeles, California, on account of the encouraging business in 1921, has decided to increase the output of its plant at Compton, Los Angeles County, 300 per cent. The company has recently made extensions to the works, and the president, Adolf Schleicher, is finding much extra work in supervising the installation of new machinery which he bought on a recent trip East.

The first vessel of the Union Sulphur Line fleet to arrive in the port of Los Angeles is the 11,000-ton freighter "Henry D. Whiten," which docked on January 15, with 6,700 tons of sulphur from Sabine, Texas, for local rubber and chemical manufacturers.

The Rounsavelle Tire Co., one of the largest tire distributers in southern California, with headquarters at 800 West 8th street, Los Angeles, California, has added Thomas A. Bradley, a veteran rubber expert, to its sales force, and he will have charge of all corporation business.

S. R. FULLER TREASURER OF R. J. CALDWELL, LIMITED

R. J. Caldwell, Limited, Oshawa, Ontario, Canada, announces the election of S. R. Fuller as treasurer and chairman of the board of Canadian Connecticut Cotton Mills, Limited, to succeed the late treasurer, Tracy S. Lewis. Mr. Fuller, who was formerly president of the Stafford Co., loom manufacturer, has had much executive experience, and is well qualified to assume his new responsibilities.

The Rubber Trade in Great Britain

By Our Regular Correspondent

Trade and Wages

There is nothing optimistic to report about trade, and the money shortage seems more pronounced than at any previous period of this gloomy year. The spurt in the proofing branch seems to have been of very short duration, and the demand for mechanicals remains slow owing to continued stagnation in the cotton, engineering and other industries. The fact that about 800,000 motor car licenses are being taken out is against any complete collapse of the motor tire trade, though as concerns profits it must be noted that prices are being cut all around.

Fortunately the wages question is settled for the time being. With regard to the fitters and other engineering hands employed by all rubber works of any size notices have been posted announcing a reduction in wages. The time of taking effect varies in different shops, and in one prominent works will not take effect until the middle of February. These reductions in wages are being accepted by the men in a better spirit as they are recognizing that the hoped-for revival in trade depends very largely upon a reduction in production costs.

The need of wage reduction was emphasized by Major Darwin at the recent meeting of the Silvertone Co. The loss sustained by this important concern was in the tire shop where the turnover was rather less than a quarter of what it was in the preceding year. Causes which contributed to this slump were the dumping of car tires by American tire makers and the greater interest taken in the British market by foreign tire makers owing to the diminished demand in their own countries and the benefits derived from exchange.

Proofing and Solvents

There is not much work doing at the moment in the proofing branch. This is the season when manufacturers have to get out their designs and costs for the wholesale dealers who are placing their orders two or three months later. Competition is very keen, and the fact that raw rubber has gone up 50 per cent is against the movement which was started to put more rubber than of old into common quality proofings. The prices quoted now have to stand for a year, and there is a natural tendency to allow something for a further advance in rubber by those who have not bought well ahead. Wages certainly have come down—but other costs, notably solvents, remain high. The now defunct proofing boom practically cleared the market of solvent naphtha, and supplies in December were very short, the price rising to 3*s*. 2*d*. a gallon. This to some extent is attributable to the fact that many of the large coke-oven companies who recover by-products closed during the coal strike and have little inducement to get to full work again owing to the slack demand for coke.

As showing the keenness existing to get business it may be maintained that the Scotch proofers have invaded Lancashire with offers of goods at prices which can hardly be associated with a profit. Orders have certainly been booked, and it will be interesting to see if they are repeated. It is noted that America is now going seriously into the macintosh trade, and is somewhat worried by those bothering British goods which go all over the world. We on this side are looking with interest upon the efforts which are being put forth to get the Fordney tariff high enough to prevent effectual British competition.

Latex Products Limited

A move is being made by the Peachey Process Co. which will cause some degree of surprise. This is the installation of vulcanizing plants on rubber estates in Malaya and Ceylon for the manufacture of inlaid rubber mats, etc., for the Indian market. Rowe, White & Co., of London, have an agreement to exploit the process in the East and at home, and it is understood that underwriting is in progress for the formation of a company named Latex Products, Limited, to operate factories in Ceylon and also in London where waterproofed fabrics are to be made.

Financial Reports

W. A. Bates, Limited, rubber manufacturers, of Leicester, like many other firms, have a poor showing in their recent annual report, the trading loss amounting to £67,584. With the amount brought forward and the withdrawing of the whole of the reserve fund this loss has been extinguished and a sum of about £5,000 carried forward to the next account. The causes for the loss, as stated by the directors, are now too generally known to need enumeration, and it is to be sincerely hoped that the optimistic tone in reference to the next year's accounts will be justified in the case of this as of other similar undertakings.

The well-known balata manufacturing firm, R. & J. Dick, Limited, whose headquarters are at Glasgow, with interests also in America and Venezuela, have adjourned their annual meeting from December to February as they are not in a position yet to submit the accounts more particularly with regard to Venezuela. It is announced, however, that losses have been sustained and that a method of dealing with them will be submitted to the shareholders at the adjourned meeting.

Amalgamated Cotton Mills Trust is a Lancashire concern, a product of the late cotton boom, that consists of the Dunlop Rubber Co.'s cotton mills, Harrochs Crewdson & Co., and nine or ten other cotton manufacturing companies. Among the directors is Harvey Du Cros. It is not surprising that the report is not a good one, the ordinary shareholders getting no dividend, though the preference shareholders have been paid in full. The carry-over last year was £117,523, but this year only £5,400.

Parent Tyre Co., Limited—the old Dunlop Tyre Co.—shows a total profit of £160,893, though £75,100 represents dividends accrued but not yet declared on the holding of Dunlop rubber preference shares. Out of £85,784 now actually available it is proposed to pay the preference dividend and 8 per cent on the ordinary shares. When the rest of the money becomes available the deferred shareholders are to receive a dividend of 25 per cent.

The Simplex Rubber Co., Limited, whose works are at Willesden, London, has gone into voluntary liquidation, and the machinery and plant are to be sold at auction. The company was formed in 1909 with a nominal capital of £150,000, with the main object of making the Simplex patent solid rubber band tires for commercial vehicles. Owing to shortage of working capital, the concern has been hampered from the start, and it does not seem as if the tire was worth the inconvenience lavished upon it at the outset of its career. The creditors' claims of £5,500 may be augmented by claims made under guaranties of performance of the tires.

Interesting Legal Case

In a case which was heard recently at the Manchester Assizes the judgment was what the ordinary man not versed in the niceties of the law would have expected in the interests of fairness and justice.

Briefly the case was that F. Reddaway & Co., Limited, which is a regular contractor to the Admiralty for a certain class of

rubber goods, had delivered a few years ago some of these goods to the value of £250 to Devonport dock yard. A day or two afterwards before they had been inspected and passed they were destroyed by fire. The action was brought to recover payment, there being a dispute as to the ownership of the goods at the time of the fire. Counsel for the Crown contended that there had been no opportunity for examining the goods before they were destroyed, and that there had not been unconditional appropriation. In the end the Judge found that the property in the goods had passed to the Admiralty, the latter retaining the right to reject, and gave judgment for the plaintiffs for £251 and costs. This certainly seems a common sense view, for after all the fire was the Admiralty's and not the manufacturers'.

The Institution of Rubber Industry

There was a good attendance at the Manchester meeting of December 5 when Dr. S. S. Pickles read a paper on "The Ingredients of Rubber Mixings," the discussion being so prolonged that a further paper on the agenda was held over to the next meeting.

Pará versus Plantation Rubber

With regard to an old controversial point he said that there is a definite though almost inexplicable difference between fine hard Pará and plantation rubber, though he thought that planters had a grievance in that the manufacturers' complaints have been vague, indefinite and sometimes contradictory. The main point to his mind was that though fine hard Pará might be specially suitable for certain purposes, it is its property of uniformity that tells in its favor. There may be a little variation, but never to the extent which requires adjustment of the mixings or alteration of the time of curing in the works, whereas with plantation rubber, more especially the brown grades, the variation is sometimes appalling. There is also a tendency for a rubber to show different results according to the composition of the mixing.

A further difference is noticeable in mastication, for whereas one rarely hears of trouble in breaking down wild Pará rubber, it is quite common to get considerable variation in plantation rubbers, even of the same class. While some break down quite easily on the rolls, others on account of their toughness or high plasticising temperatures, require much more working and generate so much heat that if the mixing process follows directly afterward they become partially vulcanized, thus rendering satisfactory calendering almost impossible.

Vulcanization

Going on to speak of vulcanization, Dr. Pickles said there is little reason to suppose that the different forms of sulphur act differently, as it has been shown that at the curing temperature all the forms are converted into the same. The interesting remark was made that 70 years ago Moulton was using hyposulphite of lead as a curing agent, but Dr. Pickles had no first-hand information to give regarding the various patented processes of old times to which he referred. With regard to silenium he said it has been shown that it is capable of vulcanizing, though he had not tried it himself. In the ensuing discussion, however, Mr. Mandleberg said that he had tried it in a variety of ways and had quite failed to get any vulcanizing effect.

Organic Accelerators

Referring to accelerators, Dr. Pickles said that extracted rubber, even with litharge present, cures much more slowly than when the natural resins are present. It is clear to his mind that the activity of litharge as an accelerator is dependent on some constituent of the raw rubber which either activates the litharge or is activated by it. In speaking of organic accelerators reference was made to the market prices of those on the market as quoted month by month in THE INDIA RUBBER WORLD, there being no such information available in British trade literature.

It is impossible in the available space to summarize even the most important observations made. He made it clear that though one organic accelerator might act in a measure similar to another in a pure rubber and sulphur mix, say aniline and thiocarbonilide, if zinc oxide were added the activity in the case of the aniline would remain the same, while the accelerating action of thiocarbonilide was very much increased. The arguments of increased output with the same plant, etc., were very alluring, but although the use of accelerators might be quite safe with small articles they must proceed with caution in the case of solid tires and certain mechanicals where heat conductivity becomes an important factor.

Rubber Fillers

A rapid survey of the various fillers contained the observation that the original idea of them as merely occupying space is now giving way, and their use is now dependent upon scientific and rational considerations. Each filler produces certain definite effects and there is a certain optimum concentration at which those effects are most pronounced. Carbon black is by some regarded as the filler par excellence, zinc oxide being a good second. Fossil flour has a stiffening action up to 30 per cent by volume, while whiting has a stiffening action up to 20 per cent. Amorphous bodies give better results than crystalline and generally the finer the state of subdivision the better. Unfortunately with minerals as with rubber there is often variability to contend with; for instance, the basic carbonate of magnesium is not always basic and zinc oxides are known to vary. With regard to MR it is difficult to understand how the name came into use; no doubt it tends to prevent oxidation by closing up the pores of the rubber though in large amount it produces a deadening effect. In the ensuing discussion one speaker stated that samples he had cured with thiocarbanilide in 1909 are still quite sound, and with reference to this and other queries as to which organic accelerator is the best to use, Dr. Pickles said he would rather not give an opinion on the point.

American Hot-Water Bottles

A good many remarks were made on the subject of hot-water bottles, the topic being started by a statement by Fordyce Jones that he is a large importer of American hot-water bottles, and though he has had no trouble with the yellow, light and chocolate-colored bottles, he has had much trouble with the dark red ones which cracked on the surface. This was due, Dr. Pickles thought, to the use of that doubtful substance, red oxide of iron. Another speaker who said he had bought American bottles without being aware of it, as there was no special mark on them, drew from Fordyce Jones the remark that it was time he had heard of such a thing as he had always found that American bottles were marked as such. Other speakers urged that our manufacturers ought to turn out hot-water bottles with the good American appearance in addition to the good qualities which they already possess in other respects.

Tyre Manufacturers' Association

At the fifth annual general meeting of the Tyre Manufacturers' Association the following were elected on the committee for the ensuing year:

F. W. Hinde, Avon India-Rubber Co., Limited; E. Healey, W. & A. Bates, Limited; Walter Boyd, Dunlop Rubber Co., Limited; J. Traxler, Henley's Tyre & Rubber Co., Limited; Alexander Johnston, North British Rubber Co., Limited; Reginald Moseley, David Moseley & Sons, Limited; G. A. Parsons, The Palmer Tyre Co., Limited; Lieutenant-Colonel J. Sealy Clarke, G. Spencer-Moulton & Co., Limited, and Wood-Milne, Limited. Colonel Sealy Clarke is chairman, and E. Healey vice-chairman for the period.

John Spiller, Deceased

The recent death of the veteran chemist, John Spiller, recalls to my mind, and no doubt to many of my contemporaries, the interesting paper he read at the Chemical Society on the oxidation of india rubber. I remember at the commencement of my career reading this paper in the transactions of the Chemical Society for 1865, and no doubt those who have never read it are familiar with extracts from it or with the name of Spiller's resin which at one time, at any rate, was freely applied to the oxidation product of vulcanized rubber extracted by hot alcohol. Spiller was a resourceful chemist of many activities, and to most chemists he will be best remembered by his work in connection with photography, but to the rubber chemist the work he did over half a century ago on the cause of the decay of rubber will remain as his leading achievement.

The Rubber Trade in Europe

By Our Regular Correspondent

Germany

Thoughtful persons in Germany are watching the trend of affairs with increasing anxiety even while the masses living only in the present are shortsightedly rejoicing in the boom that seems to be in full swing. More and more frequently articles appear in the papers showing the unsoundness of the existing conditions and warning against complete "selling out" of goods. Foreigners enticed by the bargains to be had owing to the low rate of the mark are buying all they can. Consequently orders for goods are coming in heavily and manufacturers are busier than they have ever been. Much indignation is shown in correspondence and articles in local papers over the fact that manufacturers sell to foreigners at German prices or quote prices in marks, as a result of which German goods are sold below the prevailing market value.

Finally the Government has decided that conditions were serious enough to warrant interference, and measures have been taken to prevent the "Ausverkauf," as this clearance of German goods at ridiculously low prices is termed. As far as rubber is concerned, from December 15, 1921, all manufacturers of rubber are subject to export restriction. From this date no rubber goods may be exported without permit. At the same time an export tax of 6 per cent will be levied on goods for which permits have been obtained.

For the present the following are still free: crude rubber, gutta percha, balata; waste rubber, gutta percha and balata; worn out pieces of goods made of rubber, gutta percha and balata; factice and other rubber substitutes.

Furthermore, to prevent retail stores from being cleaned out by foreigners traveling in Germany and eager to benefit by the bargains offered, all export of articles of daily use via tourists' luggage is prohibited.

These measures do not solve the vexatious question of export prices. The mark in Germany, of course, has a higher purchasing value than outside and the problem is to fix upon a method of pricing that shall be profitable to the exporter who has to buy his raw materials with cheap marks, and at the same time shall be sufficiently attractive to act as an inducement to buyers. In the *Berliner Tageblatt*, Dr. Arthur Heichen recently suggested a method of calculating the export price as follows: To the gold mark price of pre-war times a certain percentage is to be added to make good the depreciation of the currency. This extra charge is calculated from the present world market price as compared with that prevailing before the war. Of this, a part is to be deducted so as to permit competition with foreign countries.

The Trend of Prices

Prices continue to soar and are subject to change without notice. When a dealer or importer places an order he does not know exactly when he will get it and at what price, for the price will be that quoted on the day delivery is made and prices are constantly jumping. This constitutes a real hardship, however orders continue to pour in.

Prices for technical rubber goods had been raised on November 19, 1921, but by November 23 new and still higher prices were announced. All technical goods have been increased 100 per cent, some 125 and 150 per cent.. Spiral tubes with an inside diameter of 50 millimeters are 125 per cent higher and those with larger diameters are 110 per cent higher. Surgical hard and soft rubber goods had been increased on November 15. From November 25 they were again considerably advanced and apparently the end of this jumping of prices is not yet in sight. These newest prices are: 200 per cent more on seamless rubber goods; 160 per cent on patent rubber goods, including tobacco pouches; 100 per cent on catheters and hard rubber goods, and 120 per cent on bathing caps and sponge holders. All kinds of tires have been raised 30 per cent.

German Notes

The Kabelwerk Rheydt, Akt.-Ges., Rheydt, has declared a dividend of 6 per cent for preferential shares and of 20 per cent for original shares. The capital of 25,000,000 marks will be doubled. This is made necessary because of the extraordinary increase in the prices of raw materials. The company's business condition is said to be good, in fact the works are kept extremely busy filling orders.

The Weinheimer Gummi- und Guttaperchawaren-Fabrik, Weisbrod & Seifert, G. m. b. H., Weinheim, Bavaria, has just celebrated the 25th year of its existence. The firm suffered a good deal during the war and the rubber goods and textile hose departments had to be shut down from 1917 to 1919 owing to lack of fuel and raw material.

New German Firms

Fabrikations- und Handelsgesellschaft Huff & Co., m. b. H., Berlin; manufacture and sale of rubber goods.

Asbest- und Kautschuk-Handelsgesellschaft, m. b. H., Hamburg; this company will deal in rubber and have sole selling rights in Germany of blue asbestos from the South African mines of the Cape Asbestos Co., Limited, London.

Niederrheinische Packungsfabrik, G. m. b. H., Duisburg; manufacture and sale of all kinds of packing.

Vacuum Spinter-Gesellschaft m. b. H., Hamburg; sale of Vacuum Spinter rubber rings. A design patent for these rings has been issued in Germany and a patent in Germany and abroad has been applied for.

The firm Wilh. Gompertz & Co., Krefeld, has been changed to Gompara, Akt.-Ges., Mechan. Gummiband-Weberei, Kordel- und Litzenfabrik. The capital is 3,300,000 marks.

Bergische Gummiwarenfabrik Don & Müller, Wermelskirchen.

Ernst Dobler & Gebr. Aktiengesellschaft, Berlin; manufacture and sale of all kinds of hard and soft rubber as well as of hard and soft rubber substitute; further, continuation of the business of Max and Hermann Dobler—Ernst Dobler & Gebr., Berlin—where the manufacture and sale of hard and soft rubber goods are concerned. The company is capitalized at 2,000,000 marks.

Deutsch-Russische Industrie-Bedarfs-Gesellschaft m. b. H., Grunau, near Berlin. This firm will attempt to resume business connections between Germany and Russia and will deal particularly in machinery, all kinds of technical goods and all kinds of other goods.

Pressurit Aktien-Gesellschaft, Hamburg; import and export of technical goods; sale of high pressure plates patented under the name Pressurit. The capital is 1,000,000 marks.

Gustav Ehrhardt Gummiwarenfabrik, Hanover.

Altgummi-Verwertungsgesellschaft m. b. H., Leipzig; dealing in old rubber.

The firm Zieger & Wiegand Aktiengesellschaft, Leipzig-Vo, capitalized at 1,500,000 marks, will take over the Gummiwarenfabrik Zieger & Wiegand, Leipzig.

Austria

There is some similarity in the business conditions of Austria and Germany. Austrian buyers are rushing to cover their needs of finished goods and raw materials for a long time ahead. Of course this is due to exchange conditions. Values have risen considerably of late and since the Vienna Fair prices for surgical rubber goods have averaged an increase of from 200 to 300 per cent. But there are signs of a healthier under-tone. What is most necessary for local business is more self-confidence. Foreign aid in the shape of credits no longer seems to be considered the one and only remedy for the situation prevailing. Instead, there is much wholesome preaching of the doctrine of self-help. A local loan, which is planned will help to clear and improve economic conditions, it is believed.

It is reported that the Semperit Aktiengesellschaft will be reorganized as a Swiss holding company. The Semperit-Oesterr.-Amerik. A.-G. developed from the Oesterr-Amerik. Gummifabrik, which was established in 1889 by the Wiener Bankverein. It owns factories in Vienna-Hütteldorf, and Vysocan, near Prague, and these circumstances have decided the directors to put the enterprise on an international basis. The Wiener Bankverein, the Niederösterr. Eskompte-Gesellschaft, and the Depositenbank are all interested in the Semperit company.

European Notes

According to *L'Etoile Belge* an international exhibition of rubber and other tropical products will be held in Brussels, Belgium, in 1924.

At a recent conference in Berlin, the president of the German-Hungarian Chamber of Commerce, Budapest, spoke about economic conditions in Hungary. Among the articles which were needed in the country, he mentioned various kinds of machinery and all articles needed for hygienic purposes and for medical purposes. It seems that most of the exporting to Hungary is being done by English firms, which are said to make most favorable terms for Hungary. Italy, too, has a good share in this export trade.

B. Lange ("Practica"), Stockholm, has taken over the sole agency for Sweden of the Munson Supply Co., New York, N. Y., manufacturer of the Munson pneumatic typewriter speed keys, and also a soft rubber handle for the platen. Orla Malmberg, Kopenhagen B., is agent for this American concern in Denmark.

Pirelli & Co., Milan, Italy, has changed its name to Società Italiana Pirelli. It is opening branches at Bucharest and Zürich and closing the one at Geneva.

Foreign Tariffs

Belgian Congo

Export duties on the principal commodities exported from the Belgian Congo have been reduced from .15 to 0.20 franc per metric ton, according to recent reports. The duties on most of these exports, among which rubber occupies a place of importance, were reduced in April, 1920, from 3 per cent ad valorem to 2 per cent ad valorem.

Brazil

According to a Brazilian decree American preferential duties for the year 1922 will be continued, as is also the case with the rates on certain Belgian goods. Among these preferential rates granted to American products for another year is a 20 per cent reduction on certain manufactures of rubber—those included in Item No. 1033 of the customs tariff.

Denmark

An emergency tariff law, which became effective in Denmark last November will remain in force until April 21, 1922. The new permanent tariff law is now before the legislature. Increased duties under the present regulations are levied on certain articles, among them being waterproofed fabrics.

Ecuador

As a result of the fall in the price of rubber the President and Congress of Ecuador, South America, have authorized the suspension of export duty on rubber. This decree has reference to the collection of all or part of the taxes levied on rubber exported from Ecuador.

France

A presidential decree, dated December 16, 1921, modifies the duties on certain articles imported into France. Among the commodities subject to the new regulations are the following:

Tariff No.	Articles	Coefficient of Increase: Former	New
ex 620	Elastic tissues:		
	Not made up by sticking, sewing, hemming or stitching	2, 1.8 or 3	5
	Made up into clothing, accessories of clothing or other articles by sticking, sewing, hemming or stitching		5

Germany

While some of the regulations for entry permits in connection with goods imported from the Occupied Territory into Unoccupied Germany have been recently withdrawn, other requirements still hold good. Among the articles for which these entry permits are still necessary the following were noted:

Tariff No.	Articles
ex 574	India rubber tubing for tires of vehicles and cycles.
578	India rubber tires for vehicles; covers for same of textile materials impregnated or coated with india rubber or combined with internal layers of india rubber.
ex 579	Piston packing, stuffing box packing and cord packing of coarse textile goods, yarn or felt, in combination with india rubber or with stearic acid, talc, tallow or asbestos and other piston and cord packing of similar nature.

German customs duties on certain articles have been doubled, according to recent statements in the Board of Trade Journal. The following were noted as subject to the new regulations: rubber hose, shoes and cycle tires; wagon covers of tissues impregnated, etc., with rubber.

According to amendments of German customs regulations certain goods are now included in the "Export Free List." For these goods no export licenses are required, the decree having become effective December 1, 1921. Among the commodities mentioned are the following:

Tariff No.	Articles
98	India rubber, gutta percha and balata, raw or purified; waste and used pieces of these materials: "factice" and other india rubber substitutes.
ex 919 ex 920	Parts of cycles (except motive machinery and parts thereof) of iron or other common metals or alloys thereof, or of wood, cork, hard rubber, horn, leather or celluloid or molding materials similar thereto, in consignments weighing up to 350 grammes net.

Switzerland

Still further restrictions, effective November 20, 1921, have been placed upon the importation of certain articles into Switzerland, and these changes include the following:

Items 517, ex-518, 521, ex-522—articles of india rubber, excepting air chambers and pneumatic tires, with or without metallic insertion, for automobiles, motor cycles, and velocipedes; item ex-528—waterproof fabrics for sanitary purposes: item ex-529—articles of celluloid, and balls, syringes, nipples, air cushions, rubber pouches, and gloves for surgeons.

FINANCED BY AMERICAN AND BRITISH CAPITAL, THE PARAGON Rubber Co. has been established in Mexico City, Mexico, and will manufacture mechanical rubber goods and proofing. David H. Forbes, formerly with Du Pont's fabrikoid division, is works manager.

The Rubber Trade in the Far East

By Our Regular Correspondent

Malaya

The commission appointed by the Governor of the Straits Settlements and the High Commissioner of the Federated Malay States to report on the present depression in the rubber industry, and on the extension of credit facilities, has completed its investigation and the conclusions are briefly as follows:

Compulsory restriction should be introduced providing that the Netherlands East Indies and Ceylon join the scheme. If this cooperation is obtained, the government should borrow in London and assist estates, but on stringent terms.

The Secretary of State should again be asked to reconsider his decision against compulsory restriction, but failing his consent thereto, restriction of exports should be resorted to.

A land bank should be formed to advance funds against crops and to operate on the lines of the Netherlands Indian Banks.

Every effort should be made by the government to retain labor in the country.

Every possible encouragement and assistance should be given by the government to the development of new industries, agricultural and otherwise.

Three members of the commission were of the opinion that restriction should be enforced in Malaya even though Ceylon and Java refused to cooperate. They considered that a 50 per cent restriction in Malaya alone could not fail to affect prices favorably. One member, while agreeing that restriction, if adopted by Malaya, Java and Sumatra and Ceylon, would be the best and speediest method of reducing supplies and raising prices, declared himself against government intervention.

Apparently, Mr. Churchill had reconsidered his refusal to enforce restriction before the report came in, for we now learn that he has appointed a committee in England for the purpose of considering the conditions in the rubber industry and the means for improving it.

Meanwhile, the rubber situation seems to be righting itself. At any rate, prices keep up and people are more optimistic than they have been for some time. In the opinion of many, the corner has been turned. And again the question of stocks comes in for discussion. There is a feeling expressed by quite a number of planters and recently by chairmen of rubber producing companies, that the surplus stocks are not nearly so large as is generally held to be the case. Of course, there are others who are a little nervous about this raising of rubber prices and they are afraid that the market has been tampered with again.

Rubber Factories in Malaya

From time to time, people here have asked why the rubber produced in Malaya should not also be manufactured in Malaya. And now, during the slump, the contrast between the losses suffered by the producers and the huge profits supposed to have been made by the manufacturers, has inflamed the planters with a desire to manufacture rubber goods and so get back what is their due. They feel that they can "give the world purer and more durable articles than much of the rubbish which is now being made." All attempts in this direction are strongly encouraged by the local press and already the advent of two or three different kinds of rubber paving blocks has been heralded.

The *Straits Budget*, December 2, 1921, tells of a mat of crude rubber that has just been submitted for inspection. Its size is 3½ feet by 2½ feet, the color dull yellow with pale blue bordering and there are some initials in the center. The mats are to sell at $5.25 each—one Straits dollar equals about 57 cents American currency—and there is practically no limit to size or design, although for the present, colors are rather limited. Reversible mats of a much harder texture are also turned out by the same estate, the Kingsland Estate, a division of the Broga Rubber Estates, Limited. At Ipoh very serviceable locally made shoes with pure rubber soles are on sale and price and finish are said to compare favorably with the imported article.

Says the *Malayan Tin & Rubber Journal:*

"If shoes, why not tires? Probably good durable motor tires, with a much larger rubber content, can be produced in British Malaya and be sold to the consumer at half the retail price of the best-known foreign makes. If this be possible, and we believe it is, there is a large market to be exploited in the East. Only a few days from us by steamer there is the vast country of India where motor cars are commonly used, besides which there is the Far East, a great and ever-expanding market."

Great interest is also being shown in the manufacture of soles of Ceylon blanket crêpe.

A correspondent of the last quoted paper suggests that independent estate owners should become cooperative manufacturers. The dollar companies could put up a factory in Malaya.

Company Notes

The Mount Austin (Johore) Rubber Estates, Limited, a Danish firm, reports that the output for the year was 3,068,601 pounds. Of this, 1,230 tons were delivered on forward contracts at an average price of 2*s.* 2.35*d.* a pound. The f. o. b. cost of production was 1*s.* 1.9*d.* a pound. Considerable economies have been effected lately and it is hoped thus to bring cost price well under 1*s.* a pound for the current year. The company still has to deliver for 1921: April-June, 75 tons at 2*s.* 5¾*d.* a pound, c. i. f. New York; July-December, 300 tons at 2*s.* 5¾*d.* a pound, c. i. f. New York; April-December, 450 tons at 2*s.* 4½*d.* a pound, ex godown Singapore; for 1922: January-December, 1,200 tons at 2*s.* 4½*d.* a pound ex godown, Singapore. As a result, the outlook for this firm is satisfactory. A dividend of 20 per cent was declared, absorbing £120,000 and leaving £7,213.12.7 to be carried forward.

The Caledonian (Selangar) Rubber Company Limited, produced 377,089 pounds of rubber and realized a net profit of £824. This with the past year's profit showed a balance at credit of profit and loss of £6,888. In spite of this, it was decided not to pay any dividends for the past year. Rigid economy was the order of the day and consequently the f. o. b. costs had been reduced to 6*d.* a pound. The outlook for the company is sound.

The final judgment in the "Merlimau Case," in which the Crown claimed excess duty on the profits of the company for 1914, 1915 and 1916, was in favor of the company and will be greeted with pleasure by a number of rubber companies, who were similarly situated. It was agreed to regard the Merlimau appeal as a test case and the final decision in the company's favor will mean that the other cases will be dropped, that companies which have already paid on the higher scale will be able to recover the difference, very substantial in many cases. To many this decision will mean all the difference between being able to carry on or going under in the slump.

Ceylon

The success obtained with propagation of Hevea by vegetative means in Java has aroused much interest in Malaya and Ceylon. Recently Mr. Parsons, of the Royal Botanic Gardens, Peradeniya, Ceylon, spoke on experiments and results obtained in Ceylon with budding and grafting of Hevea. From a report made by the Superintendent of the Botanic Gardens, Heneratgoda, in November, 1920, which Mr. Parsons read, it appeared that at the latter place experiments with cuttings from mature Hevea trees failed completely, while 2,000 cuttings from young trees about three years old were 50 per cent successful. Marcotting and budding failed to give desired results. Grafting by the "marching" method was tried later on in Peradeniya Gardens on nursery plants 1½ to 2 years old and about 75 per cent of the grafts were successful. During 1921 a number of budding experiments were conducted by Mr. Parsons and only the last ones carried out in September appear to be making the desired progress.

The news that Mr. Churchill has appointed a committee, under

the chairmanship of Sir James Stevenson, for the purpose of investigating the present rubber situation in British Colonies and Protectorates and to advise the Secretary of State what measures should be taken to improve the existing situation, was received very calmly here. This was to be foreseen as throughout the slump Ceylon planters, the majority at least, have been frankly against restriction. This attitude has been encouraged by the failure of Malaya to secure cooperation of the Dutch in a scheme of enforced cooperation. The Dutch believe that their low costs will enable them to stand the present conditions successfully. And Ceylon is quite sure she can produce rubber even more cheaply than Java and Sumatra.

Rubber Paving

Following Singapore's lead, Ceylon is experimenting with rubber paving. A bridge in Chilaw town has been paved with locally invented and manufactured bricks. If this experiment proves successful, rubber paving in Colombo will be undertaken.

Netherlands East Indies

The *Telegraaf* publishes an interesting letter from a special correspondent on conditions in the East Coast of Sumatra.

The hard times that rubber is going through have brought producers face to face with some disagreeable facts about their methods of exploitation. For example while they believed they were working as cheaply as possible, it is now evident that extravagance was really the rule. This was due to the fact that producers were spoiled: the land here is very fertile, the climate unexcelled for rubber, and the well-organized labor department supplied all the labor required without much bother.

As a result of the comparative ease of obtaining labor, a good many more coolies were employed on estates than were really necessary. Added to this there were also too many European employes. Now all this has been changed. The number of employes, Europeans and coolies, has been cut down to the minimum, and all upkeep work that is not absolutely necessary has been abandoned. Local producers, however, still have to fight against excessive rice prices and the high coolie wages. But while costs have been considerably reduced, the effect cannot be felt immediately. The financial condition of the companies has received a rude shock and many will be unable to cover losses if they cannot obtain sufficient credit.

In spite of all this, the writer believes that when the effects of the economies make themselves felt and the price of rubber increases a little, most concerns will be able to weather the storm. Already many estates have brought costs to 80 gilder cents a kilo and by next year it is hoped to reduce this to 60 gilder cents a kilo, and if prices should rise to 1 gilder or 1.20 gilders a kilo —a gilder equals 0.40 cents normally, and a kilo equals 2.2 pounds—the healthy companies will be facing a bright future. And most companies in Sumatra are in a healthy condition.

Comparing Java and Sumatra, the writer finds that once the latter settles down to hard work it will easily match Java as far as costs are concerned; in fact, right methods combined with the natural advantage that Sumatra has over Java in the way of climate, ought in time to make of Sumatra one of the cheapest rubber producers in the world.

Reports from the Malang district, Java, state that at present the production of rubber yields no profits. Several estates working with English capital have had to close down, and only financially strong concerns are continuing to produce rubber. It is noted that not one of the Dutch firms here has had to cease operations.

Rubber as Fuel

Recently a Java rubber estate burned some of its lower grades and scrap instead of firewood in locomotive boilers and it was proved that the calorific values of the rubber were enormous. The best results were obtained with wet rubber or tacky scrap mixed with dry straw. Bark shavings also were satisfactory and these alone were sufficient to give all the steam that was necessary.

Trials have also been made to turn the rubber into gas. The results would indicate that there ought to be a ready market in Java with the sugar mills for generating steam when they begin their campaign. Railway locomotives can be successfully run by rubber fuel. Scrap rubber pressed into 4-pound blocks can be easily handled and generates steam very quickly. It seems that rubber gives an amount of heat equivalent to petroleum.

PLANTATION RUBBER COMPANY REPORTS

Accounts of annual meetings, with reports as to the condition of various estates, indicate that most of the leading plantations agree as to the advisability of restriction. Costs, they say, have been materially reduced, and a sane production policy is advocated. They do not claim, however, to be entirely out of the woods, as there are many problems confronting the industry, particularly the questions of labor and labor shortage. Extracts follow from two of these reports.

Kenny (Selangor) Rubber Company, Limited

The report for the year ended June 30, 1921, shows a profit of £3949:1s. for the past year's working. This result has been accomplished largely in consequence of having had a forward contract of three tons monthly running over the whole of the year, 1921, at the satisfactory price of 2*s.* 03/4*d.* a pound London.

The original estimate of the rubber crop for the year was 380,000 pounds. This was, however, restricted to 276,420 pounds—a reduction of nearly 25 per cent—in accordance with the recommendation of the Rubber Growers' Association.

The f.o.b. cost of production—namely, 10.02*d.* a pound—for the year compares favorably with the previous year's figure of 11.03*d.*, and but for heavy losses on rice amounting to 1.38*d.* a pound of crop, the comparison would have been much more favorable. The all-in-all cost of production for the year was 1*s.* 0.27*d.* (including 1.38*d.* for rice losses).

As regards the future the restricted estimate of crop for the year to June 30, 1922, is 306,000 pounds dry rubber—slightly more than was secured last year—but this may possibly be exceeded. The estimated f.o.b. cost for this year is the low one of 6¼*d.* a pound. For the first four months of the year the f.o.b. cost has been well below this estimate, which looks to be fairly safe unless unforeseen circumstances bring about a general increase in costs. The recent reimposition of the F.M.S. export duty on a new tariff has added almost ¼*d.* a pound to the cost of production.

Sungei Bahru Rubber Estates, Limited

The rubber crop for the year amounted to 431,225 pounds. This is a good deal less than the original estimate, owing to the necessity to restrict output. The average gross price realized was 1*s.* 3½*d.* a pound. It was a very low price, but would have been considerably lower had not a fairly large number of favorable forward sales been made during the year and in the previous year. The estimate put forward for the current year is practically the same as the output for last year. This will be realized on the basis of alternate-day tapping throughout the whole of the estates of the company.

The three estates of the company including the new estate, Batu Berkarat, are putting up their full share of the crop. Home and Sungei Siput is giving 175,000 pounds, Lubok China is giving an equal amount, and Batu Berkarat 85,000 pounds. For the first four months of the year 148,000 pounds of rubber were harvested and there seems no doubt that the moderate estimate will be fully obtained. At the present time the crop is being produced f.o.b. at a cost of about 9*d.* a pound including the whole of the eastern costs, and the company is entirely paying its way.

Recent Patents Relating to Rubber

The United States

Patented December 6, 1921

NO. 1,398,975 Tire casing. F. G. Renos, Akron, O.
1,399,041 Demountable rim construction. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
1,399,107 Windshield cleaner. H. Frankowski, Buffalo, and A. Hoffman, Lackawanna—both in N. Y.
1,399,180 Core for tire casings. F. L. Bailey and J. H. La Grant, Wichita, Kans.
1,399,272 Pressure gage for pneumatic tires. F. Ogle, Philadelphia, Pa.
1,399,288 Machine with rubber rollers, for postmarking and canceling letters. W. H. Bowes, Greenwich, Conn.
1,399,292 Captive ball practice device. C. F. Craig and H. M. Connor, San Francisco, Calif., assignors to Craig Golfmeter Co., a Delaware corporation. (See description elsewhere in this issue.)
1,399,293 Playing ball for captive ball practice device. C. F. Craig and H. M. Connor, San Francisco, Calif., assignors to Craig Golfmeter Co., a Delaware corporation.
1,399,304 Wringer. B. S. McCutchen, Plainfield, N. J.
1,399,310 Dust cap for tire valves. E. V. Myers, East Orange, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
1,399,311 Dust cap for tire valves. E. V. Myers, East Orange, N. J., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.
1,399,324 Armored pneumatic tire. G. M. Stivers, Dixon, Calif.
1,399,328 Resilient heel and tread insert. H. H. Troxel, Ashland, O.
1,399,358 Rainproof hood cover for automobiles. G. F. Mansfield, Pascagoula, Miss.
1,399,405 Quick detachable dust cap. G. W. Scott, Santa Rosa, Calif.
1,399,410 Disk wheel for pneumatic tires. T. S. Stafford, assignor to H. G. Saal—both of Chicago, Ill.
1,399,416 Hose clamp. H. Turner, Sr., Gleneig, South Australia, Australia.
1,399,430 Segmental casing for tires. R. N. Ink, San Diego, Calif.
1,399,459 Fuller ball. D. B. Bird, Chicago, Ill.
1,399,482 Wringer. H. C. Hirschy, Minneapolis, Minn.
1,399,556 Pneumatic tire. L. A. Hill, Washington, D. C.
1,399,575 Inner tube. H. C. Privett, Long Beach, assignor of ½ to C. R. Privett, Burbank, ⅛ to H. E. Privett and ⅛ to H. F. Privett, Long Beach—all in Calif.
1,399,584 Pneumatic knee-pad. J. T. Shelton, Cooper, Tex.
1,399,670 Resilient tire. J. F. Stranahan, assignor of ½ to J. F. Mora—both of Pittsburg, Calif.

Patented December 13, 1921

1,399,766 Boot and shoe sole having tread of fiber and rubber strips arranged endwise and heel and shank of rubber and cork composition. J. E. Grusjean, Lima, O.
1,399,791 Tire valve structure. R. M. Pierson, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.
1,399,836 Pneumatic heel. G. J. Winter, assignor of ½ to H. G. Phillips—both of Buffalo, N. Y.
1,399,870 Fruit huller with elastic tube at finger opening. A. Pearce, Mission City, B. C., Can.
1,399,961 Fixed rim and locking ring structure for demountable rims. L. B. Harvey, assignor to Harvey Rim & Wheel Co., Inc.—both of Buffalo, N. Y.
1,400,100 Vehicle of self-laying track type, having tread surface of vulcanized material. F. Reddaway, Pendleton, Manchester, Eng.
1,400,143 Rubber shoe construction. F. Dial, Washington, D. C.
1,400,151 Resilient tire. M. Golein, Brooklyn, N. Y.
1,400,263 Tire tread. F. H. Carlisle, Davisville, R. I., assignor to J. M. Gilbert, New York, N. Y.
1,400,269 Breaker strip for tires. B. Darrow, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
1,400,301 Tire with cord wound spirally around beads, the cord being braided solidly around an inner core of unvulcanized rubber and the whole impregnated with rubber. J. S. McClurg, New York, N. Y., assignor to Carlisle Tire Corporation, a Delaware corporation.
1,400,311 Fountain pen. N. B. Panoff, Brooklyn, N. Y.
1,400,428 Fabric backing for composition soles. G. B. Greenough, deceased, by N. B. Greenough, administratrix, Malden, Mass., assignor to The Goodyear Tire & Rubber Co., Akron, O.
1,400,450 Armored pneumatic tire. J. and C. Butazzi Morelli, Barcelona, Spain.
1,400,452 Spirally wound fabric and rubber tube construction. J. F. Muldoon, Melrose, Mass.

Patented December 20, 1921

1,400,539 Endless belt having rubberized cord embedded therein. C. C. Gates, Denver, Colo.
1,400,547 Massage apparatus with rubber rollers C. G. Holmstrom, Washington, D. C.
1,400,976 Life-saving device. W. G. Parmele, Seattle, Wash.
1,401,015 Demountable rim for tires. J. C. Theberath, assignor to The Standard Parts Co.—both of Cleveland, O.
1,401,045 Pneumatic tire having non-puncturable shell inserted between casing and inner tube. W. L. Clendenning, Philadelphia, Pa., assignor of ½ to R. Kelly-Walker, Wildwood, N. J.
1,401,061 Armored pneumatic tire. S. J. Flynn, Portsmouth, Va.

Patented December 27, 1921

1,401,148 Tire. W. G. Fording, Cleveland, O.
1,401,227 Elastic lingerie-strap retainer. H. M. Wyeth, South Hanson, Mass.
1,401,264 Separable rim for tires. L. Lynch, Los Angeles, Calif.
1,401,301 Armored tire. W. H. Aldridge, Portland, Ore.
1,401,306 Tire flap. G. R. Bird, Rockford, Ill.
1,401,429 Suspension air-cushion. G. S. Matthews, assignor of ½ to A. Doehler—both of Kansas City, Mo.
1,401,421 Inner-cushioned wheel. F. Mead, Chicago, Ill.
1,401,425 Hose nozzle. H. E. Meng, Oak Park, assignor to W. D. Allen Manufacturing Co., Chicago—both in Illinois.
1,401,430 Demountable rim for tires. F. H. Moyer, Johnstown, Pa.
1,401,431 Resilient wheel. C. Neimeyer, Little Rock, Ark., assignor to Demountable Spring Tire Co., St. Louis, Mo.
1,401,457 Dish scraper with rubber blade. F. Bruckmann, East St. Louis, Ill.
1,401,462 Shower-bath nozzle. E. Circle, Coalton, Okla.
1,401,567 Non-puncturable and non-collapsible pneumatic inside tire. O. Yates, Portland, Ore.
1,401,541 Dust cap for tire valves. H. P. Kraft, Ridgewood, N. J.
1,401,542 Sectional demountable rim for tires. J. G. Kuenzinger, Chicago, Ill.
1,401,547 Bed-pan with inflatable cushion. B. Moseley, Sumter, S. C.
1,401,569 Reproducing hats with gutta percha paper, muslin, etc. T. Semmig, nee Teich, Dresden, Germany. Application renewed. Granted under Act of March 3, 1921, 41 Statute Laws, 1313
1,401,610 Pneumatic tire with interliner having staggered projections on its outer surface. A. G. Kuhn, Covington, Ky.
1,401,634 Hard rubber mouthpiece for musical instruments. H. E. O'Brien, Indianapolis, Ind., assignor of ½ to H. B. Henton, Philadelphia, Pa.
1,401,677 Life-saving suit. J. F. Dade, Littlefork, assignor to Universal Safety Suit Co., Inc., Minneapolis—both in Minnesota.
1,401,724 Gas mask M. Palij, Chicago, Ill.
1,401,776 Stopper for washbowls. M. C. Hatton, Ontario, Calif.
1,401,788 Rubber mat. J. Kelleher, assignor to Continental Rubber Works—both of Erie, Pa.
1,401,805 Wringer. W. H Meyer, St. Louis, Mo., assignor by mesne assignments to The Davis Sewing Machine Co., a Delaware corporation.
1,401,815 Demountable wheel for pneumatic tires. G. E. Powell, Chicago, Ill
1,401,860 Elastic girdle. A. B. Beck, Jersey City, N. J
1,401,861 Elastic girdle. A. B. Beck, Jersey City, N. J.

The Dominion of Canada

Patented November 15, 1921

214,239 Dust cap for tire valves. H. P. Kraft, Ridgewood, New Jersey, U. S. A.
214,241 Gage and pump connection. H. P. Kraft, Ridgewood, New Jersey, U. S. A.
214,242 Tire valve cap. H. P. Kraft, Ridgewood, New Jersey, U. S. A.
214,243 Dust cap for tire valves. H. P. Kraft, Ridgewood, New Jersey, U. S. A.
214,263 Life-preserver valve. M. C. Schweinert, West Hoboken, New Jersey, U. S. A.

Patented November 22, 1921

214,319 Resilient heel. E. J. Emery, Lynn, Mass., U. S. A.
214,356 Rubber weatherstrip for lapped windshield panels. The Fisher Body Co. of Canada, Limited, Windsor, Ont., assignee of J. T. Allmand, Detroit, Mich., U. S. A.
214,371 Tire valve. A. Schrader's Son, Inc., New York, N. Y., assignee of E. Van Aiken Myers, East Orange, N. J.—both in U. S. A.
214,372 Tire valve. A. Schrader's Son, Inc., assignee of R. H. Henemier—both in New York, N. Y.
214,373 Pressure gage and pump connection. A. Schrader's Son, Inc., New York, N. Y., assignee of W. P. Hammond, Maplewood, New Jersey—both in U. S. A.
214,374 Pump coupling. A. Schrader's Son, Inc., assignee of M. C. Schweinert, both in New York City, U. S. A.
214,375 Tire valve. A. Schrader's Son, Inc., assignee of M. C. Schweinert, both in New York City, and H. P. Kraft, Ridgewood, New Jersey—both in U. S. A.
214,376 Dust cap for tire valve. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, New Jersey—both in U. S. A.
214,377 Tire rim nut. A. Schrader's Son., Inc., assignee of M. C Schiveinert—both of New York City, U. S. A.
214,378 Dust cap for tire valves. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, New Jersey—both in U. S. A.
214,379 Bushing for tire valves. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, New Jersey—both in U. S. A.
214,380 Dust cap for tire valves. A. Schraeder's Son, Inc., assignee of M. C. Schweinert—both of New York City, U. S. A
214,381 Dust cap for tire valves. A. Schrader's Son, Inc., asignee of M. C. Schweinert—both of New York City, U. S. A.
214,382 Valve for fire extinguishers, etc. A. Schrader's Son, Inc., assignee of M. C. Schweinert—both of New York City, U. S. A.
214,383 Tire valve. A. Schrader's Son, Inc, assignee of M. C. Schweinert, both of New York City, and H. P. Kraft, Ridgewood, New Jersey—both in U. S. A.
214,384 Tire valve. A. Schrader's Son, Inc., New York City, assignee of J. A. Bowden, Los Angeles, Calif.—both in U. S. A.
214,385 Dust cap for tire valves. A. Schrader's Son., Inc., New York City, assignee of E. Van Aiken Myers, East Orange, New Jersey—both in U. S. A.
214,386 Dust cap for tire valves. A. Schrader's Son, Inc., New York City, assignee of E. Van Aiken Myers, East Orange, New Jersey—both in U. S. A.
214,387 Dust cap for tire valves. A. Schrader's Son, Inc., New York City, assignee of E. Van Aiken Myers, East Orange, New Jersey—both in U. S. A.

Chemical Patents will be found on pages 357-358. Machinery Patents on pages 365-366

214,388 Dust cap for tire valves. A. Schrader's Son, Inc., New York City, assignee of F. Van Aiken Myers, East Orange, New Jersey—both in U. S. A.

Patented November 29, 1921

214,442 Pneumatic tire. E. B. Killen, London, E. C. 4, Eng.
214,487 Pneumatic tire valve. A. Schrader's Son, Inc., assignee of M. C. Schweinert, both of New York City, U. S. A.

Patented December 6, 1921

214,560 Resilient tire. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of L. H. Davis, Weehawken, New Jersey, U. S. A.
214,561 Truck tire. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of L. R. Davis, Weehawken, New Jersey, U. S. A.
214,573 Golf ball. The B. F. Goodrich Co., New York City, assignee of W. W. Evans, B. Dales, W. H. Juve, and E. H. Jukins—all of Akron, O.—both in U. S. A.
214,578 Hot-water bottle. The F. E. Partridge Rubber Co., Limited, assignee of F. H. McFadden, both of Guelph, Ont.

Patented December 13, 1921

214,618 Resilient wheel. J. E. Garies, Flush, Kansas, U. S. A.
214,622 Demountable wheel rim. A. E. Henry, Greensburg, Pa., U. S. A.
214,633 Closure for ice-bags. H. P. Kraft, Ridgewood, New Jersey, U. S. A.
214,650 Detachable rubber heel. A. Powell, Stoke-on-Trent, Stafford, Eng.
214,695 Rubber horseshoe pad. M. B. and M. M. Trauger, coinventors, both of Scranton, Pa., U. S. A.

Patented December 20, 1921

214,706 Inner tire cushion. J. W. and G. F. Burgess, coinventors, both of Kansas City, Mo., U. S. A.
214,711 Stamp affixing machine. W. H. Assay, Asbury Park, New Jersey, U. S. A.
214,746 Non-collapsible tire. J. B. Lynch, Syracuse, New York, U. S. A.
214,771 Air cushion device for vehicle suspension. J. M. Viera, Long Beach, Calif., U. S. A., executor of estate of M. Petterson, deceased.

Patented December 27, 1921

214,867 Molded rubber battery vent. The Canadian Consolidated Rubber Co., Limited, Montreal, Que., assignee of H. Weida, Highland Park, New Jersey, U. S. A.

The United Kingdom

Published December 7, 1921

170,318 Twin solid tire. J. G. Bishop, 130 Amsterdam Vale, New Cross, London.
170,332 Rubber sole protector. A. Spiller, 31 Gunnersbury Lane, Acton, London.
170,333 Rubber soles cut out to pass over heel lifts specially shaped. J. P. Mullins, the Laurels, Hare Lane, Claygate, Surrey, and H. Hayman, 23 Wickham Road, Beckenham, Kent.
170,381 Respiratory appliance. A. B. Drager, Finkelberg, Lubeck, Germany.
170,404 Respiratory appliances. L. A. Levy, 31 Shoot-up Hill, Cricklewood, and R. H. Davis, 187 Westminster Bridge Road, both in London.
170,419 Artificial arms with rubber fingers. D. M. Anderson, 12 St. James' Square, London.
170,425 Fountain pens. K. Matsumoto and K. Takagi, 14 Komagome Shinmeicho, Hongo-ku, Tokio, Japan.
170,444 Tire attachment to rim. O. Zancan, 50 Church street, New York, N. Y.
170,460 Tire attachment to rim. D. Maggiora, Castello delle Fontanelle Trespiano, Florence, Italy.
170,476 Golf tee with rubber base. H. A. and S. F. Cousins, 46 Haydon Park Road, Wimbledon, London.
170,487 Tire pump. A. Fraser, 168 Regent street, London.

Published December 14, 1921

170,753 Tire pump. F. Spencer, 2 Central Buildings, Westminster.
170,792 Sponge rubber arch support. Thornley & Booth, Limited, and S. Thornley, Boston Mills, Hyde, Cheshire.
170,847 Solid tire band. M. Desclandes, 19 rue de la Pépinière, Paris. (Not yet accepted).
170,862 Elastic sanitary belt. T. Hille, 10 Winterfeldstrasse, Berlin. (Not yet accepted).

Published December 21, 1921

170,917 Surgical truss with rubber-covered pads and rubber strap. J. R. Evans, 137 Ordnance Road, Enfield Wash, Middlesex.
170,928 Multiple rubber fabric for manufacturing tires, casings, hose, corks, washers, packing, soles and heels, stair treads, floor coverings, paving blocks, brake bands, elevator and cable grips, etc. W. P. Whitehouse, 16 Westmeads Road, Whitstable, Kent.
171,006 Sectional tread bands for pneumatic tires. F. G. Paine, 1250 East 52d street, Los Angeles, Calif.
171,018 Rubber interliner for pneumatic tires. J. W. McElvain, 1205 Fisher Building, Chicago, Ill., U. S. A.
171,025 Spring wheel with both solid and pneumatic tires. J. E. Harrigan, 415 Lexington avenue, New York City, U. S. A.
171,055 Vehicle spring-suspension combining leaf springs and pneumatic cushions. R. Bernat, 6 rue les Douves, Bordeaux, Frances.
171,077 Tire tread. Continental-Caoutchouc-und Gutta-Percha-Cie, Hanover, Germany. (Not yet accepted.)

Published December 30, 1921

171,161 Elastic cables insulated with gutta percha inner and outer sleeves. H. W. Sullivan, Winchester House, Old Broad street, London.
171,171 Rubber and fiber soles provided with gutter to facilitate sewing. British United Shoe Machinery Co., Limited, Union Works, Belgrave Road, Leicester; United Shoe Machinery Corporation, 205 Lincoln street, Boston, Mass., U. S. A.
171,204 Hose clamp. A. E. White, 88 Chancery Lane, London; Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago, Ill., U. S. A.
171,301 Teat-cup for milking machines. J. Treloar, Collingwood street, Hamilton, New Zealand.

New Zealand

Published November 3, 1921

43,804 Tire boot. E. M. Steell, Spokane, Wash., U. S. A.
46,209 Resilient tire. W. L. Von Edelkrantz, La Puente de Alvarado 29, Mexico City, Mex.
46,211 Reinforced puncture-proof tire. G. H. Berryman, Huntley West, Huntley, Waikato, Auckland, N. Z.

Published November 17, 1921

46,247 Inner tube of same diameter and circumference as inside of casing. W. Drury, 10 Lena Gardens, Shepherds Bush Road, Hammersmith, London.
46,249 Artificial denture material composed of a mixture of powdered vulcanized rubber, dental rubber, and unvulcanized dental rubber. N. Cohen, trading as Nathan Rose, "Pendennis," 2 Croft Road, Swindon, Wiltshire, Eng.
46,326 Inflatable swimming device. A. Harvey, Warkworth, Auckland, N. Z.
46,379 Motor-operated graining tool having rubber sheath over tube containing flexible shaft. The Graining Co., Limited, 26 Hunter street, Sydney, assignee of A. J. Bull, 60 Terry street, Balmain—both in N. S. W.

Published December 1, 1921

46,291 Milking-machine teat-cup. H. D. Jamieson, Kerepehi, Auckland, N. Z.

Germany

Patents Issued, With Dates of Issue

346,693 (February 13, 1915) Tie with rubber lining. William Fley, York, England; represented by M. Wagner and G. Breitung, Berlin, S. W. 11.
347,223 (April 14, 1920) Rubber cord to be atttached to shoe sole and heels. Karl Bayer, Herrenkellergasse 1, Ulm-on-the-Danube.
348,504 (March 27, 1920) Rubber sucker for dental plate. Hans Wetzler, Geleitstrasse 14, Offenbach-on-the-Main.

TRADE MARKS

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted December 6, 1921, Act of February 20, 1905

148,965 ACHILLES—tire casings and tubes. The Achilles Rubber & Tire Co., Inc., Binghamton, N. Y.
148,991 "PEIROL"—textile belting. Victor Balata & Textile Belting Co., New York, N. Y., and Easton, Pa.
149,035 MAJORITY—fountain pens. Dunn Pen Co., Inc., New York, N. Y.
149,036 SOCIETY—fountain pens. Dunn Pen Co., Inc., New York, N. Y.
149,037 SENIOR—fountain pens. Dunn Pen Co., Inc., New York, N. Y.
149,049 FEDERAL—rubber mats and matting. The Federal Rubber Co., Cudahy, Wis.
149,050 FEDERAL—rubber mats and matting. The Federal Rubber Co., Cudahy, Wis.
149,064 SURE GRIP on representation of bulldog gripping seat of a negro's trousers—sheet rubber tire and tube patches, brake lining, transmission lining, fan belts, and tires. J. W. Freedly, Conroe, Tex.
149,103 ALWETHA—ladies' raincoats. Heatons (Leeds), Limited, Leeds, Eng.
149,121 "DERA"—dolls. Irokese Trading Corporation, New York, N. Y.
149,143 CRO CORD—soles and heels made of a combination of rubber and cord fabric, the latter being placed with the ends of the cords toward the surface. The Lima Cord Sole & Heel Co., Lima, O. (See THE INDIA RUBBER WORLD, June 1, 1920, page 590.)
149,175 RED SEAL on representation of a seal—baby pants. Morris, Mann & Reilly, Chicago, Ill.
149,176 RED SEAL—baby pants. Morris, Mann & Reilly, Chicago, Ill.
149,183 JEWEL—bathing rompers. Neuman & Rubin, Philadelphia, Pa.
149,187 R. C. U.—shoes of leather, rubber, fabric, or combinations. Northern Jobbing Co., Chicago, Ill.
149,212 THE BION F. REYNOLDS SHOE inside an oval outline—shoes of leather, fabric, rubber, or combinations. Bion F. Reynolds, Brockton, Mass.
149,220 NOVALL—waterproof baby pants. Rubberized Sheeting & Specialty Co., Inc., New York, N. Y.
149,222 TINY DUMB—rubber pants for infants' wear. Sanitary Rubber Novelty Manufacturing Co., Chicago, Ill.
149,247 DAY PATCH INNER TUBE REPAIR KITS and picture of a horse—inner-tube repair kits. L. Stafford, La Salle, Ill.
149,273 ROYAL—golf balls. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.
149,278 MILEAGE V, VICTOR—pneumatic tires and tubes. The Victor Rubber Co., Springfield, O.

149,287 K—K—rubber-tired play-wagons and coasters for children. H. C. White Co., North Bennington, Vt.

Act of March 19, 1920, Section 1 (b)

149,309 ALSTON HOLD-U-THERE BRASSIERE—elastic corsets, brassieres, and leg garments. A. R. Alston, New York, N. Y.
149,301 ALSTON FIGURE FORM—elastic corsets, brassieres, and leg garments. A. R. Alston, New York, N. Y.
149,313 "PROVEN BY THE TEST OF TIME"—electric cable and insulated wire. Habirshaw Electric Cable Co., Inc., New York, N. Y.
149,326 NU-FORM—men's garters. J. Press, New York, N. Y.
149,327 QUICKSLIP—babies' waterproof bloomers. Rubberized Sheeting & Specialty Co., Inc., New York, N. Y. (See THE INDIA RUBBER WORLD, November 1, 1920, page 110.)

Granted December 13, 1921, Act of February 20, 1905

149,339 MILO—rubber bands. American Lead Pencil Co., New York, N. Y.
149,359 HOPE and representation of woman pointing upward—elastic stockings, abdominal supporters, trusses, artificial limbs, etc. Chicago Orthopedic Appliance Co., Chicago, Ill.
149,369 MAGNUM—tire repair outfits. The Dunlop Rubber Co., Limited, London, Eng.
149,371 EAGLE and representation of an eagle with outspread wings, standing within an inflated inner tube—rubber patches. Eagle Tire Patch Co., Moberly, Mo.
149,387 HRB—Gun-recoil pads for hand-arms. The B. F. Goodrich Co., New York, N. Y.
149,388 NORKA—gun-recoil pads for hand-arms. The B. F. Goodrich Co., New York, N. Y.
149,389 TITANIC—rubber and fabric belting. The B. F. Goodrich Co., New York, N. Y.
149,400 STERILLO—lather brushes. The Hardright Co., Belleville, N. J.
149,401 HARDRIGHT—lather brushes. The Hardright Co., Belleville, N. J.
149,402 YELLOW JACKET and representation of a wasp—lather brushes. Hardright Co., Belleville, N. J.
149,403 BLUEBEARD—lather brushes. The Hardright Co., Belleville, N. J.
149,408 GOLFAIRIF—game apparatus consisting of rings and inflated balls for a parlor game. B. M. Hutchison, Plymouth, Eng.
149,425 PINNACLE—hose, dredging sleeves, and machinery packing. The B. F. Goodrich Co., New York, N. Y.
149,453 PUN-GEE—dolls. The Miller Rubber Co., Akron, O.
149,463 FLEXCAR—rubber belting and hose. New Jersey Car Spring & Rubber Co., Inc., Jersey City, N. J. (See THE INDIA RUBBER WORLD, February 1, 1921, page 378.)
149,465 MARATHON—golf balls and golf-stick grips. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.
149,495 FEEL SURE—tires and tubes. Sam Bretch Wholesale Specialties, Oklahoma, Okla.
149,496 SATISFACTION—tires and tubes. Sam Bretch Wholesale Specialties, Oklahoma, Okla.
149,497 JIM DANDY—stationary vulcanizing plants for tire repair. Scheffer & Rossum Co., St. Paul, Minn.
149,532 ROYAL—golf balls. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.

Act of March 19, 1920, Section 1 (b)

149,562 ANTHONY—pumps, paint and water-spraying devices, blowers and air compressors. The Anthony Co., Long Island City, N. Y.
149,563 ANTHONY—tire valves, etc. The Anthony Co., Long Island City, N. Y.
149,564 ANTHONY—air gages, etc. The Anthony Co., Long Island City, N. Y.
149,574 ARMORCLAD BETWEEN TIRE AND TUBE within representation of strip of reliner whose ends pass through a tire and a tube, respectively—reliners for rubber or leather tires. Adolf Finkensieper, Clifton, N. J.
149,583 HOWE—tires and tubes. Howe Rubber Corporation, New Brunswick, N. J.

Granted December 20, Act of February 20, 1905

149,638 CUP and representation of a loving cup. G. W. Beldam, London, Eng.
149,652 COAST—tires. Coast Tire & Rubber Co., Oakland, Calif.
149,671 FEDERAL—repair gums and rubber cement, wholly or partly of rubber. The Federal Rubber Co., Cudahy, Wis.
149,672 FEDERAL—repair gums and rubber cement, wholly or partly of rubber. The Federal Rubber Co., Cudahy, Wis.
149,673 FEDERAL—repair gums and rubber cement, wholly or partly of rubber. The Federal Rubber Co., Cudahy, Wis.

Act of March 19, 1920, Section 1 (b)

149,786 KINZIE—rubber sheeting. Kinzie Rubber & Manufacturing Co., Chicago, Ill.
149,795 CHATTERLESS—brake linings. The Raybestos Co., Bridgeport, Conn.
149,802 DR. DARLING'S COMFORT CUSHION SHOE—shoes of leather, canvas, rubber, fabric, or a combination. Sherwood Shoe Co., Rochester, N. Y.

Granted December 27, 1921, Act of February 20, 1905

149,904 RED GIANT—tires and tubes. Du Bois Rubber & Tube Co., Chattanooga, Tenn.
149,905 LOOKOUT—tires and tubes. Du Bois Rubber & Tube Co., Chattanooga, Tenn.
149,917 DOUBLE-CABLE-BASE—tires. The Federal Rubber Co., Cudahy, Wis.
149,919 MULTI-CABLE-BASE—tires. The Federal Rubber Co., Cudahy, Wis.
149,920 WEGO—tire fillers. N. W. Finch, Chicago, Ill.
149,950 HOPE MAID—elastic webbing. Hope Webbing Co., Inc., Pawtucket, R. I.
150,007 AERO—golf balls. The Midland Rubber Co., Limited, Birmingham, Eng.
150,020 SILHOUETTE ELASTIC with representation of a miniature—elastic braids. The Narrow Fabric Co., West Reading borough, near Reading, Pa.
150,079 KITTEN—a game ball similar to an indoor baseball or playground ball. L. J. Rober, Minneapolis, Minn.
150,179 WILLWIN in white letters against diamond-shaped black background—elastic webbing. Julius Wile Sons & Co., New York, N. Y.

The Dominion of Canada

Registered

28,704* BERGOUGNAN—tires. Bergougnan Rubber Corporation, Trenton, New Jersey, U. S. A.
28,751* FISK—tires, tubes, and accessories, tire repair supplies, sectional air bags, bead pressure pads, etc. The Fisk Rubber Co., Chicopee Falls, Mass., U. S. A.
29,752 GREY WING—tire casings and tubes. The Premier Tire & Rubber Co., Limited, Toronto, Ont.
29,753 555 (FIVE FIFTY FIVE)—tire casings and tubes. The Premier Tire & Rubber Co., Limited, Toronto, Ont.
29,758 INCA—rubber pads for boots and shoes. Blakey's Boot Protectors, Limited, Armley Malleable Ironworks, Modder Place, Armley, Leeds, Yorkshire, Eng.
29,836 Representation of a volcano in action enclosed within a circular band bearing the words NOBEL INDUSTRIES LIMITED TRADE MARK—manufactured rubber and gutta percha goods. Nobel Industries, Limited, Nobel House, Buckingham Gate, London, S. W., Eng.
29,901 WHALE-BONE-ITE—rubber composition toilet-seats with and without covers. The Brunswick-Balke-Collender Co., Chicago, Ill., U. S. A.
29,996 PRESIDENT—rubber plates or pads for soles. Phillips' Patents, Limited, 142-146 Old street, London, Eng.
30,005 MOHICAN and representation of an Indian head—toy advertising balloons. The Mohican Rubber Co., Ashland, Ohio, U. S. A.
30,045 REDDAWAY—belting and hose. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Eng.
30,054 PCM surrounded by concentric circles—inner tubes. Pirelli & C., Milan, Italy.

*Omitted from The Canadian Patent Office Record, July 26, 1921.

The United Kingdom

Published December 7, 1921

418,873 LEW—electric light and telephone flexibles composed of two or more wires insulated with rubber, etc. The London Electric Wire Co. and Smiths, Limited, 7 Playhouse Yard, Golden Lane, London, E. C. 1.
418,875 LEW—wire covered with rubber. The London Electric Wire Co. and Smiths, Limited, 7 Playhouse Yard, Golden Lane, London, E. C. 1.
418,876 LEW—impregnated electrical insulation tapes. The London Electric Wire Co. and Smiths, Limited, 7 Playhouse Yard, Golden Lane, London, E. C. 1.
418,908 MV arranged as a monogram within a circle—electric insulators, insulating materials and preparations. Metropolitan-Vickers Electrical Co., Limited, 4 Central Buildings, Westminster, London, S. W. 1.
418,973 KOLVULCA—all goods included in Class No. 40. W. B. Rushton and J. B. Taylor, 118 Market street, Farnworth near Bolton, Lancashire.
419,449 Representation of a bee within a circle, bearing the words BEE and TUM, respectively, on its wings—machine belts and belting included in Class No. 50. F. Reddaway & Co., Limited, Victoria Mills, Cheltenham street, Pendleton, Manchester, Lancashire.
419,548 EMERALDA—raincoats, etc. R. H. Green, trading as The United Welsh Mills, 19 The Hayes, Cardiff.

Published December 14, 1921

B415,838 NORTH BRITISH RUBBER CO. LIMITED, Edinburgh, between two concentric circles within the inner one of which is representation of an elephant above the word Trade Mark—rubber boots, rubber-soled shoes, and galoshes. The North British Rubber Co., Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.
419,433 ZENOPREZ—vulcanizing apparatus. Harvey Frost & Co., Limited, 148-150 Great Portland street, London, W. 1.
419,458 ELLAN-ESS on circular black band against conventional background and surrounding picture of a Scottish girl and a sword—all goods included in Class No. 38. Lyle & Scott, Limited, Ellan-Ess Factory, Lothian street, Hawick, Scotland.
419,549 TOLWEN—rain coats, etc. R. H. Green, trading as The United Welsh Mills, 19 The Hayes, Cardiff.
B419,996 TOWY—raincoats, etc. R. H. Green, trading as The United Welsh Mills, 19 The Hayes, Cardiff.
420,036 MILLOMAC—macintoshes and rainproof garments. S. Miller, 6 King street, Salford.

Published December 21, 1921

418,926 EAGLE—elastic cords, braids, and webs, corset laces, and brace ends. W. J. Adams & Co., Limited, 20 Mount street, Manchester.
419,328 JOLLY—manufactured goods of rubber and gutta percha except gloves. T. H. Harris & Sons, Limited, 22 Marsh Gate Lane, Stratford, London, E. 15.

Published December 28, 1921

B404,799 BOSTON—suspenders for socks and stockings. George Frost Co., 551 Tremont street, Boston, Mass., U. S. A.; address for service in the United Kingdon, care of Carpmaels, Ransford & Newton, 24 Southampton Buildings, London, W. C. 2.

418,793 EXPRESS—footballs. J. O. Forshaw, 92 Hamilton street, Birkenhead.

420,012 NERFLEX—manufactured rubber and gutta percha goods not included in classes other than No. 40. The New Eccles Rubber Works, Limited, Monton Road, Eccles, near Manchester, Lancashire.

New Zealand

Published November 3, 1921

16,109 Conventional representation of a tire enclosing the words KELLY SPRINGFIELD TIRE CO. fancifully arranged—tires. Kelly-Springfield Tire Co., Broadway and 57th street, New York City, U. S. A.

17,580 NAUGAHYDE—imitation leather bags, brief and card cases. United States Rubber Co., New Brunswick, N. J., and New York, N. Y.—both in U. S. A.

17,581 Representation of a seal bearing in the center the words U. S. RUBBER SYSTEM and around the edge between concentric circles the words UNITED STATES RUBBER COMPANY AND ASSOCIATED COMPANIES—general manufactured rubber goods. United States Rubber Co., New Brunswick, N. J., and New York City—both in U. S. A.

18,028 ECLIPSE—teats for feeding bottles. J. G. Ingram & Son, Limited, Felstead street, Hackney Wick, County of London, Eng.

Published November 17, 1921

17,363 Hood pierced by an arrow from left to right—footwear. Hood Rubber Co., Boston, Mass., U. S. A.

Published December 1, 1921

16,765 Representation of a tire on a wheel, the tire bearing the word FISK and the center part of the wheel the letter F—manufactured rubber and gutta percha goods not included in classes other than Class No. 40. The Fisk Rubber Co. of New York, Chicopee Falls, Mass., U. S. A.

17,364 Hood pierced by an arrow from left to right—tires. Hood Rubber Co., Boston, Mass., U. S. A.

18,388 INCA—rubber pads for soles. Blakey's Boot Protectors, Limited, Armley Malleable Ironworks, Modder Place, Armley, Leeds, Yorkshire, Eng.

18,412 Representation of a shield divided into three parts bearing a rose, a thistle, and a shamrock, respectively, accompanied by the words LANCO BALATA on a scroll across the top and TRADE MARK at the sides, all above the word Belting—balata belting.

DESIGNS

The United States

Patented December 6, 1921

No.
59,909 Chewing gum, etc. Term 14 years. E. J. Noble, Port Chester, N. Y.

59,910 Chewing gum, etc. Term 14 years. E. J. Noble, Port Chester, N. Y.

59,911 Chewing gum, etc. Term 14 years. E. J. Noble, Port Chester, N. Y.

59,945 Combination fountain pen and pencil. Term 14 years. S. Zdanowicz, Aquebogue, N. Y.

Patented December 13, 1921

59,966 Rubber mat and cover. Term 14 years. H. Joseph, Grayling, Mich., assignor to Joseph Sanitary Products Co., Milwaukee, Wis.

59,973 59,982

59,971 Rubber shoe-sole. Term 14 years. D. T. Lebo, Kansas City, Mo.

59,973 Tire tread. Term 14 years. W. W. McMahan, Trenton, N. J., assignor to Ajax Rubber Co., Inc., Millbrook, N. Y.

59,982 Tire. Term 14 years. L. B. F. Schoenfeldt, Holyoke, Mass.

Patented December 20, 1921

60,048 Rubber heel. Term 7 years. S. Messina, Jamestown, N. Y.

60,054 Device for advertising infants' rubber pants. Term 7 years. H. Morris, Chicago, Ill.

60,07[illegible] Child's rubber-tired velocipede. Term 14 years. J. K. Tully, assignor to Metallic Industries Inc.—both of St. Louis, Mo.

60,07[illegible] Rubber-tired play-car. Term 14 years. J. K. Tully, assignor to Metallic Industries Inc.—both of St. Louis, Mo.

60,078 Respirator filter ring. Term 14 years. F. Willson, assignor to Willson Goggles Inc.—both of Reading, Pa.

Patented December 27, 1921

60,084 Garter. Term 14 years. T. Cahn, Elkins Park, Pa., assignor to Pioneer Suspender Co., a Pennsylvania corporation.

60,103 Mop head with rubber rollers. Term 7 years. Mabel P. and J. McNaughton, New York, N. Y.

The Dominion of Canada

Patented July 19, 1921*

5,115 Tire tread. F. Hill, Hamilton, Ont.

5,116 Tire tread. H. Obee, Toronto, Ont.

5,117 Tire. Hercules Rubber Co., Limited, Brampton, Ont.

*Omitted from The Canadian Patent Office Record of July 26, 1921.

Patented November 30, 1921

5,245 Tire tread. E. J. Taylor, Toronto, Ont.

Patented December 1, 1921

5,247 Tire tread. W. H. Clarke, Toronto, Ont.

Patented December 5, 1921

5,267 Tire tread. Canadian Consolidated Rubber Co., Limited, Montreal, Que.

5,277 Rubber heel. W. H. Clarke, Toronto, Ont.

Patented December 20, 1921

5,291 Sole pad for footwear. W. J. McLaughlin, Montreal, Que.

Germany

Design Patents Issued, with Dates of Issue

798,350 (October 25, 1921) Rubber insert for boot soles. Max Ortmayer, Forst i. L.

798,378 (September 22, 1921) Tube with inlay of resilient fiber cord. Peter Becker, Victoriastrasse 25, Cologne.

798,600 (October 21, 1921) Colored rubber plate with tops of a different color. Flügel & Polter, Leipzig-Plagwitz.

798,850 (October 7, 1921) Bandage to cover bow legs. Marie Lindner, née Bubale, Meiningen.

798,875 (October 31, 1921) Uterine pessary. Sanitaria, G. m. b. H., Ludwigsburg.

798,913 (October 27, 1921) Injection syringe. Société Pierre & Mosnier, Paris; represented by Dr. Landenberger, Berlin, S. W., 61.

799,135 (September 19, 1921) Detachable rubber heel. Johann Bräuer, Seidlitzstrasse 17, Gelsenkirchen.

799,150 (October 15, 1921) Inhaling apparatus. Arthur Ascher, Königgrätzerstrasse 43, Berlin.

799,157 (October 24, 1921) Nail catcher for rubber tires. Max Bohist, Paulinenstrasse 20, Breslau.

799,203 (October 17, 1921) Rupture band. Wilhelm Gundermann, Weingartenstrasse 39, and August Förster, Florastrasse 2, both in Würzburg.

799,409 (November 3, 1921) Sanitary binder. Josef Jaschke, Haspe i. W.

799,588 (November 4, 1921) Non-rolling medicinal syringe. Grünebaum & Scheuer, Berlin.

799,629 (October 24, 1921) Rubber sole. Westdeutsche Gummi Kompagnie, H. Charmann, Düsseldorf.

799,848 (October 17, 1921) Rubber heel, corner and sole with semicircular inserted leather strips for attaching. August Allgaier, Franckenstrasse 1, Hanover.

800,183 (October 17, 1921) Syringe. Neumann & Cie., Köln.

800,205 (November 7, 1921) Rubber heel in several parts. Paul Steinbach, Ebersbach-Fils, Württ.

800,224 (November 1, 1920) Non-skid tire. Continental Caoutchouc & Gutta Percha Compagnie, Hanover.

800,288 (August 13, 1921) Shoe heel with exchangeable rubber surface. Anton Messmann, Fürtherstrasse 111, and Paul Hopf, Moltkestrasse 11, both in Nürnberg.

801,199 (October 4, 1921) Self-luminous comforter for children. Franz Anton Bayer, Aschaffenburg.

801,345 (November 9, 1921) Clyster apparatus that can be used as irrigator. Wilhelm Schleenbecker, Giessen.

801,481 (November 21, 1921) Pneumatic comforter for children. Paul Sproesser, Ludwigsburg.

THE NOLAN ACT

Authorities state that the Nolan Act is a piece of post-war legislation relating to patents, and of especial interest to foreigners filing applications in their respective countries. While the time limit for filing these applications expired September 3, 1921, it is of interest, however, to citizens of this country if they contemplate purchasing patents granted under the provisos of this act, or if there is any question of patent infringement. In all such cases, whenever one of such patents is involved, the circumstances should be thoroughly investigated.

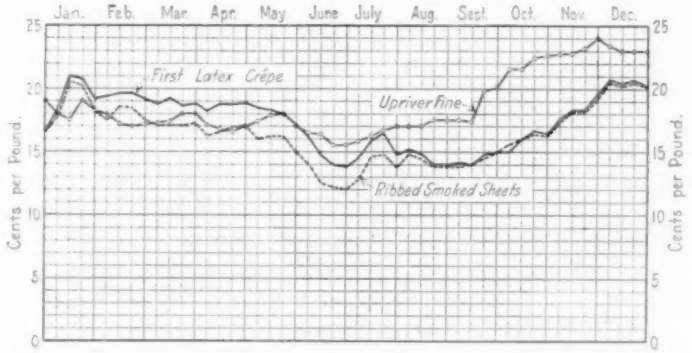
TOY BALLOONS IN SEALED ENVELOPES

The real danger in connection with the use of toy balloons is the fact that conditions in regard to their sale are usually very unsanitary. Balloons are carelessly carried in open packages and handled by many persons. Realizing this The Faultless Rubber Co., Akron, Ohio, originated the idea of packing toy balloons in sanitary sealed envelopes.

As to the widely-discussed question regarding the dyes used in the manufacture of toy balloons, one manufacturer states that the use of dyes has been generally discontinued by most balloon manufacturers, and the old pigment color process substituted. Other manufacturers claim that if dyes are properly made no injurious effects are possible. The sealed envelope idea seems, at all events, a very wise precaution.

The New York Crude Rubber Market During 1921

THE year 1921 appears to have witnessed the turning point in the most remarkable decline of crude rubber prices in history; a decline which had been practically continuous for a year and a half prior to July, 1921, and which was the final plunge of the toboggan slide which, with its numerous ups and downs, was begun early in 1917. Although the year 1921 opened with a steadily weakening market, a temporary reaction developed during the first four months, only to be followed by rapid decreases to unprecedented low levels at the end of June. Since that time, however, prices, with improving volume of business, have advanced with minor fluctuations until, on December 23, the market was firmer and more active than for many months and prices were back to approximately what they had been about the middle of November, 1920, but on an advancing rather than a declining market. Apparently the corner has been turned, and with the better business prospects of 1922 greater firmness may be reasonably anticipated. However, many factors well known to the trade seem to indicate that the upward climb will be gradual, with some doubt as to the extent of the recovery.



Fluctuations of First Latex Crêpe, Ribbed Smoked Sheet and Upriver Fine Spot Rubber During 1921

At the close of 1920, spot prices were: first latex crêpe, 16¾ cents; ribbed smoked sheets, 16 cents; upriver fine, 18-18½ cents. First latex crêpe futures were: January-March, 17½ cents; April-June, 19 cents; July-December, 23½ cents. Ribbed smoked sheet futures were: January-March, 17½ cents; April-June, 18½ cents; July-December, 23 cents. Early in January, responding to an advance of several points in sterling exchange, the plantation rubber market reacted, spot rubber advanced and futures accordingly. Short covering resulted on the part of dealers unable to buy in primary markets on account of the exchange situation, but otherwise the market remained dull with little factory business until the end of the month, when spot quotations were: first latex crêpe, 20 cents; ribbed smoked sheets, 19¾ cents; upriver fine, 18½-19½ cents. London stocks were reported as 54,502 tons, and New York stocks, aside from those in factories, 250,000 tons, estimated as sufficient to cover American needs for the entire year 1921. Business in futures was adversely affected by exchange difficulties. Mouldy rubber was offered at bargain prices, but standard grades were held at a premium. Pará sorts prices did not respond to the improvement in plantations, due to unfavorable exchange, and the demand was small.

The February market was featureless with few sales and unimportant price changes, indicating that factory stocks were ample for the reduced scale of operations. Delay in maturing the Goodyear refinancing plans continued to cause uncertainty among the importers and dealers involved. On February 23, spot prices were: first latex crêpe, 20-20½ cents; ribbed smoked sheets, 18½-19 cents; upriver fine, 17½-18 cents. At the end of February the world's stock of crude rubber, all grades, was estimated at 300,000 tons, or the world's output of about one year.

During the second week of March the market weakened, spot plantations selling as low as 16 cents for direct factory business. Futures became easier, April-June selling at 18½ cents, and July-September going freely at 20 cents. Considerable selling between dealers and factories developed about the middle of the month, but the market soon weakened again. Stimulated by reports of renewed activity in automobile manufacturing the market firmed up late in the month, spot prices on March 26 being: first latex crêpe, 18½-19 cents; ribbed smoked sheets, 17 cents; upriver fine, 17-17½ cents.

Late in March and continuing in April there was some activity due to purchases mostly from small and western concerns which had liquidated their high-priced stocks, and from those manufacturing tires on order, also some trading in futures among dealers. Favorable decisions averting the threatened American railway strike, the English general strike, and resumed production of the Goodyear company also helped to develop an upward tendency in prices, all plantation grades and also Parás firming up in consequence. On April 25, spot prices were: first latex crêpe, 19-19½ cents: ribbed smoked sheets, 17-17½ cents; upriver fine, 17½-18 cents.

A weak and erratic market followed in May with dealers overstocked and demand very light. Under selling pressure early in the month smoked sheet declined to 15½ cents but this ceased within a few days, and under the influence of higher London cables, worked up to 17 cents, although dealers were still selling to factory consumers at 16½ cents. With Brazilian reports of no collecting, little rubber coming down the rivers, and few offers in quantity, Parás also worked up to 18 and 18½ cents about the middle of the month, buyers offering 17½ cents. Late in May, however, the market reacted sympathetically in response to disturbed trade conditions, weak far eastern markets and American tire price reductions. On May 24, spot prices were: first latex crêpe, 18 cents; ribbed smoked sheets, 16 cents; upriver fine, 18 cents.

Demoralized conditions prevailed throughout June, due to distressed stocks thrown on the market and sold at a sacrifice, and the strong competition among dealers to secure business, however small. With an inactive market and little interest in futures, prices declined to the lowest levels in the history of crude rubber, when on June 23 first latex crêpe sold for 13½ cents; ribbed smoked sheets, 11½ cents; upriver fine, 15½ cents. First latex crêpe futures were: July-September, 15 cents; October-December, 16 cents; January-March, 17 cents. Ribbed smoked sheet futures were: July-September, 13 cents; October-December, 14 cents; January-March, 15 cents.

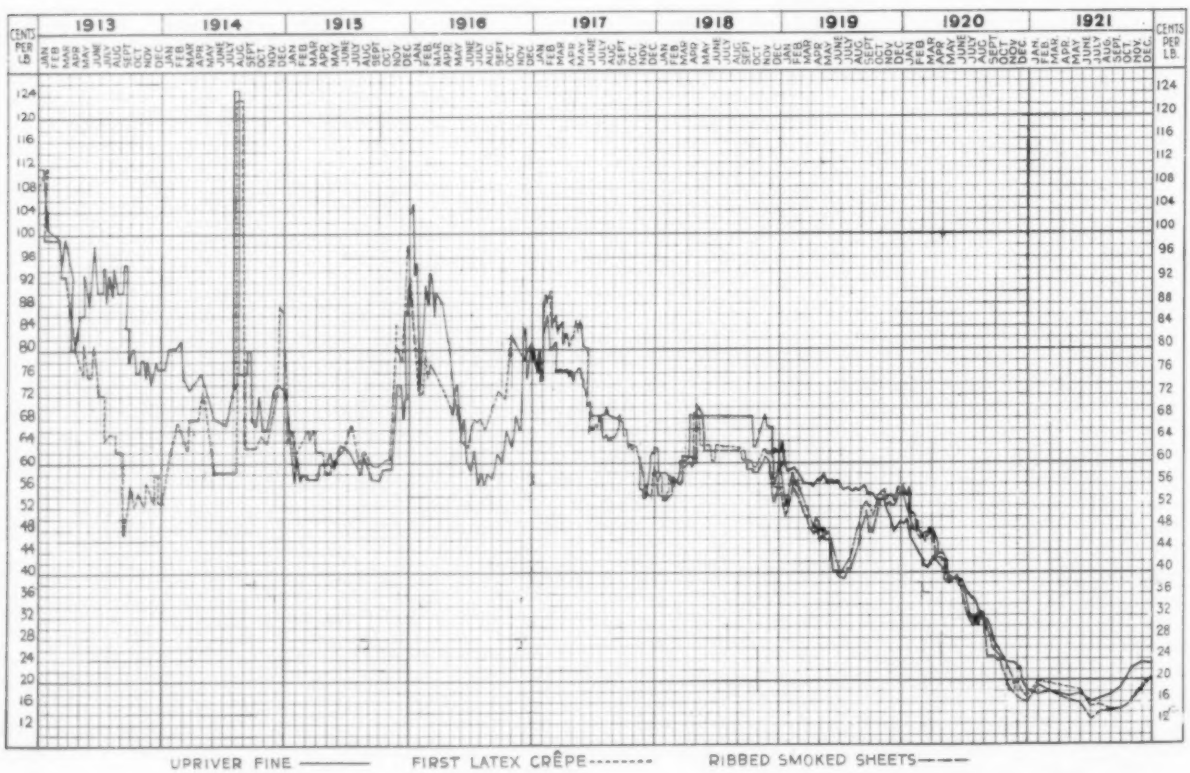
Early in July the tide turned and a firmer tendency was shown, due to settlement time in London, local short covering and a little factory buying attracted by the low prices. Following the Rubber Growers' Association's announcement of a 50 per cent crop reduction, the market stiffened and large operators refused to sell, resulting in many buying orders being cabled to the Far East. Arrivals continued to be considerably less than

the preceding year, and with better banking facilities importers refused factory business except at advanced prices. As the month progressed, the market developed further strength stimulated by the renewed interest and activity of both seller and buyer. Parás moved upward in sympathy with the plantation market. On July 23 spot prices were: first latex crêpe, 15½ cents; ribbed smoked sheets, 14½ cents; upriver fine, 17-17½ cents. First latex crêpe futures were: August-September, 15¾ cents; October-December, 16½ cents; January-March, 17½ cents. Ribbed smoked sheet futures were: August-September, 14¾ cents; October-December, 15¼ cents; January-March, 16½ cents.

Prices remained fairly steady with a firm undertone during August, although dullness brought minor declines toward the end of the month. Considerable factory buying, prices firmly held by dealers and large buying orders in the Far East gave strength early in the month, but later the market sagged under selling pressure. Parás gained several points early in the month, due to the rise in Brazilian exchange, and upriver fine rose to 19½ cents, but lacking interest it later fell to 17½ cents. On August 25 spot prices were: first latex crêpe, 14½ cents; ribbed smoked sheets, 13¼ cents; upriver fine, 17¼ cents. For several months crêpe had been at a premium of 1½ to 2 cents over ribs, but during August the tendency toward similar price levels became marked. This was due to more crêpe and less ribs being made, the quantity of mouldy ribs arriving for some time having had a depressing effect on this market. For the first time during the year imports for the month exceeded those for the corresponding month of 1920.

Following Labor Day the September market showed steady improvement with considerable buying of both spot and future plantation grades, despite imports considerably in excess of those for September, 1920. This was due in part to replacements owing to water damage sustained by 1,700 tons arriving by S. S. "City of Shanghai," but also to buying for future needs on the part of forehanded consumers who realized that higher price levels were due. Toward the close of the month ribs lacked only ¼-cent of equaling the price of crêpe. In response to this buying activity and firmer exchange Singapore prices stiffened perceptibly. On September 26 New York spot prices were: first latex crêpe, 16 cents; ribbed smoked sheets, 15¾ cents; upriver fine, 21 cents. First latex crêpe futures were: October-December, 16½ cents; January-March, 17 cents; January-June, 18 cents. Ribbed smoked sheet futures were: October-December, 16½ cents; January-March, 17 cents; January-June, 17½ cents. During the last week in September spot prices declined from ¾ to 1 cent a pound, factory demand lessened on the sag in prices and dealers were inclined to buy rather than sell.

Early in October, London and Singapore cables indicated firmer prices. The New York market was high and strong with few transactions, the situation being further promoted by a strike of dock men and weighers which delayed unloading cargoes, inspections and deliveries by dealers. Spot quotations were lower than those at which rubber could be imported and higher prices were foreseen. During the third week of the month the market became very active with business in all grades and positions, due partly to the threatened nation-wide railroad strike. The call for immediate shipment of rubber on contract by the factories caused many dealers to make spot purchases for these deliveries. Prices advanced in consequence and futures accordingly. On October 25 spot prices were: first latex crêpe, 16½-16¾ cents; ribbed smoked sheets, 16¾ cents; upriver fine, 21½-21¾ cents. The passing of the threatened railroad strike eased the market situation at the end of the month, when spot quotations for both first latex crêpe and ribbed smoked sheets receded to 16 cents, future positions from 1½ to 2½ cents in advance of spot. Parás held firmly during the month; balata was in fair demand, and



New York Spot Rubber Prices. Upriver Fine and First Latex Crêpe, 1913-1921. Ribbed Smoked Sheet, 1918-1921.

Pontianak quite active late in the month. Imports for the month were 23,469 tons, more than twice those for October, 1920, and much larger than for any preceding month of 1921.

November found the market firm and strengthening with both crêpe and sheet at 17 cents for spot at the end of the first week. Active buying followed by dealers in both New York and London and by certain manufacturers in the Far East. With more buyers than sellers, dealers not offering their stocks and quoting only high prices, the market was seen to be in very firm hands. Prices steadily advanced except on the 17th, when cables showed a weakness and spot sold at 17¾ cents, but the market reacted and on November 23 spot quotations for both first latex crêpe and ribbed smoked sheets were 18¾ cents; upriver fine, 24 cents. Imports for the month were 19,733 tons. While this was nearly 4,000 tons less than in October, it was over three times the imports for November, 1920. Total imports of all grades for the eleven months ended November 30, 1921, were 162,673 tons, compared with 210,060 tons for the corresponding period in 1920—a decrease of some 25 per cent.

The first ten days of December witnessed an active and strengthening market, spot first latex crêpe advancing sharply about 2 cents in all positions, the highest prices of the year. Manufacturers placed orders freely in view of increasing prices, factors entered the market both as buyers and sellers and futures were stiffened by a rise of 7¾ cents in sterling exchange. Parás failed to develop the activity in plantation grades. Spot upriver fine showed a decline of one cent which it reached and held after December 8. Quiet with very steady prices characterized the balance of the month, decreased factory buying being occasioned by the near approach of the inventory period. Cheap grades of spot were in some demand. Ambers and roll brown sold at prices out of proportion to their worth; 18 to 19 cents for the former, and 18 cents for the latter. This is attributable to lessened production of low grades in consequence of restricted production of high grades. On December 23 spot prices were: first latex crêpe and ribbed smoked sheets, 20½ cents, upriver fine, 22½-23 cents. Plantation futures, both crêpe and ribs were: January-March, 21¼ cents; April-June, 22¼ cents; July-December, 24½ cents. Dealers look for a steady market with a strong rising tendency, especially higher prices for spot and nearby, due to active buying early in the new year.

Throughout the year most of the lower grade rubbers, both plantation and South American, also balata, have followed the general trend of the better grades, although the demand for cheap rubber was small, owing to the low prevailing prices of the best grades. Centrals followed a similar course, except that guayule washed and dried showed considerable strength. Manicobas also were well maintained. Africans and East Indians were practically off the market except Pontianak, which suffered only slight price fluctuations. Gutta percha fluctuations were gradual and comparatively small. Reclaimed rubber has shown a gradual weakening throughout the year with plant operations at one-third to one-half capacity meeting the demand.

SUGGESTIONS TO TRUCK USERS

In an instance where 35 by 5 cord tires were used for both front and rear wheels of several three-quarter ton trucks two remedies might be suggested to obviate peeling of the rubber of the rear tires. These were passenger car tires, which are not constructed to sustain the side sway of trucks that are fitted with overhanging bodies. Truck tires, of the same size, but which are built especially strong in the tread and sidewall, might be effectively substituted. Another plan would be to cut down the rear wheels to accommodate a 24-inch instead of a 25-inch rim and equip them with 6-inch rims and 36 by 6 pneumatic truck tires. The 6-inch tire, with its carrying capacity of 2,200 pounds, would more than pay for itself in service.—Technical Service Bureau, United States Tire Co., New York, N. Y.

LOWEST AND HIGHEST NEW YORK SPOT RUBBER PRICES, 1913-1921

Prices in Cents Per Pound

		January	February	March	April	May	June	July	August	September	October	November	December
1913,	First latex crêpe	105 @ 111	96 @ 103	88 @ 96	76 @ 88	78 @ 84	70 @ 77	66 @ 70	66 @ 70	52 @ 64	50 @ 52	52 @ 60	53 @ 55
	Ribbed smoked sheets	109 @ 113	101 @ 110	97 @ 102	81 @ 97	81 @ 83	72 @ 73	70 @ 73	67 @ 72	60 @ 64	59 @ 61	59 @ 60	55 @ 66
	Upriver fine	102 @ 110	96 @ 102	88 @ 96	77 @ 88	82 @ 91	86 @ 89	83 @ 92	83 @ 93	77 @ 88	72 @ 78	73 @ 78	71 @ 74
	Upriver coarse	76 @ 84	72 @ 78	63 @ 72	52 @ 66	55 @ 61	54 @ 62	50 @ 56	50 @ 53	48 @ 52	46 @ 49	46 @ 49	44 @ 47
1914,	First latex crêpe	55 @ 61	58 @ 64	58 @ 65	64 @ 72	57 @ 65	54 @ 57	54 @ 57	60 @ 105	52 @ 56	54 @ 62	58 @ 65	73 @ 87
	Ribbed smoked sheets	60 @ 64	62 @ 64	62 @ 65	64 @ 69	57 @ 69	57 @ 63	56 @ 63	56 @ 80	63 @ 80	63 @ 66	65 @ 84	82 @ 93
	Upriver fine	44 @ 47	44 @ 47	43 @ 46	41 @ 47	46 @ 69	38 @ 42	38 @ 42	43 @ 89	43 @ 55	43 @ 47	46 @ 53	51 @ 60
	Upriver coarse												
1915,	First latex crêpe	59 @ 64	57 @ 63	59 @ 60	59 @ 60	59 @ 61	60 @ 63	62 @ 63	59 @ 61	57 @ 58	61 @ 63	63 @ 78	76 @ 99
	Ribbed smoked sheets	65 @ 66	65 @ 66	59 @ 60	59 @ 65	59 @ 61	61 @ 63	62 @ 63	58½ @ 62	58½ @ 59½	59½ @ 62	61¼ @ 75	75 @ 79
	Upriver fine	61 @ 75	57 @ 61	58 @ 60	57 @ 60	59 @ 61	61 @ 63	59 @ 63	56 @ 59	55 @ 57	55 @ 57	57 @ 76	68 @ 87
	Upriver coarse	45 @ 58	44 @ 48	45 @ 47	46 @ 48	45 @ 46	45 @ 47	44 @ 47	42 @ 44	41 @ 43	42 @ 47	44 @ 62	57 @ 72
1916	First latex crêpe	70 @ 103	72 @ 90	83 @ 88	74 @ 82	61 @ 74	56 @ 62	52 @ 57	53 @ 56	54 @ 60	56 @ 60	60 @ 69	68 @ 82
	Ribbed smoked sheets	79 @ 102	75 @ 95	87 @ 93	78 @ 86½	64 @ 77¾	58 @ 65¾	55 @ 65	56 @ 59½	56 @ 62½	56 @ 65	62½ @ 74½	70½ @ 87
	Upriver fine	77 @ 99	73 @ 80	74 @ 78	67 @ 74	62 @ 72	62 @ 68	65 @ 68	65 @ 68	69 @ 74	71 @ 80	79 @ 83	78 @ 81
	Upriver coarse	60 @ 76	52 @ 60	56 @ 59	55 @ 57	50 @ 54	42 @ 50	41 @ 50	39 @ 40	41 @ 44	42 @ 46	45 @ 47	47 @ 56
1917,	First latex crêpe	75 @ 80	75 @ 85	82 @ 90	81 @ 83	83 @ 83½	65½ @ 80	65½ @ 67	66 @ 67	66½ @ 67½	63½ @ 65½	57 @ 61	54 @ 60
	Ribbed smoked sheets	75 @ 80	75 @ 75½	81 @ 90	81 @ 83	84 @ 84½	65½ @ 80	65 @ 67	65 @ 67	65½ @ 67	62 @ 64½	56 @ 62	52 @ 61
	Upriver fine	75 @ 79	77 @ 79	76½ @ 80	75 @ 76	75 @ 76	69 @ 74	68½ @ 69	68 @ 69	68 @ 69	63½ @ 66½	56 @ 62	54 @ 61
	Upriver coarse	50 @ 53	50 @ 53¼	52½ @ 54	51 @ 51½	51½ @ 54	49 @ 53	48½ @ 49	48 @ 48½	46 @ 48½	43½ @ 46	36 @ 41½	37 @ 41
1918,	First latex crêpe	53 @ 58	52¼ @ 57	55½ @ 60	59½ @ 70	63 @ 68½	60 @ 63	63 @ ...	63 @ ...	60½ @ 63	59 @ 60½	41 @ 63	54 @ 63
	Ribbed smoked sheets	54 @ 57¾	53 @ 57	55½ @ 60	59½ @ 70	62 @ 68½	62 @ ...	62 @ ...	62 @ ...	59½ @ 62	58 @ 59½	40 @ 61½	52 @ 61½
	Upriver fine	57 @ 61	56 @ 58	56 @ 60½	60 @ 70	68 @ ...	68 @ ...	68 @ ...	68 @ ...	68 @ ...	63 @ 68	57½ @ 68	61 @ 68
	Upriver coarse	37 @ 41	35½ @ 37½	33½ @ 34½	34 @ 38½	38 @ 42	40 @ ...	40 @ ...	40 @ ...	40 @ ...	35 @ 40	31 @ 40	36 @ 40
1919,	First latex crêpe	52 @ 58	56 @ 58	51 @ 56	47 @ 50½	45½ @ 48	40 @ 45	39½ @ 42½	41¾ @ 45½	45½ @ 52½	49½ @ 55	53 @ 54½	51 @ 54¾
	Ribbed smoked sheets	51 @ 56	54 @ 57	50 @ 54½	46½ @ 49½	44½ @ 47	39 @ 44	38½ @ 41½	39¾ @ 44½	44½ @ 51½	48½ @ 54	52 @ 54	51 @ 54½
	Upriver fine	58½ @ 61	58¼ @ 59½	55½ @ 58½	56 @ ...	56 @ 53½	53½ @ 56¾	55 @ 53½	54 @ 56	54½ @ 56	52 @ 55	49¼ @ 52	47 @ 49
	Upriver coarse	34 @ 36	34 @ 35	34 @ ...	34 @ 34½	32½ @ 34¾	32 @ 33	32 @ 33	31½ @ 32	32 @ 33½	33 @ 35	34½ @ 35	35 @ ...
1920,	First latex crêpe	51 @ 55¾	45¼ @ 51½	46 @ 48¾	42½ @ 46½	38 @ 43¼	37½ @ 39	30 @ 35¼	29¾ @ 33½	24½ @ 29	21 @ 26	18½ @ 21	16¾ @ 19½
	Ribbed smoked sheets	51 @ 55	45 @ 56½	46 @ 48	42½ @ 45	38 @ 43	37¼ @ 39	29½ @ 35	29½ @ 33½	23½ @ 28¾	20 @ 24	17½ @ 19	16¾ @ 18½
	Upriver fine	45 @ 50	42½ @ 45	41½ @ 43	40½ @ 42	39 @ 41¼	36½ @ 38¾	30 @ 35½	30 @ 35	23½ @ 26	23½ @ 26	18 @ 23	20½ @ 22
	Upriver coarse	34 @ 37	31½ @ 34	31¾ @ 31¾	30 @ 32	29½ @ 30½	27¼ @ 28¾	24½ @ 32	20 @ 27	16½ @ 21	15 @ 16½	14½ @ 15½	14 @ 15
1921,	First latex crêpe	19 @ 21¾	19¼ @ 20	18 @ 19½	18¾ @ 19½	17¼ @ 19¾	13½ @ 17½	14 @ 17	14¼ @ 17	14 @ 16	15 @ 17	16 @ 19¾	18 @ 21
	Ribbed smoked sheets	18 @ 20½	17½ @ 19	16¾ @ 18	15½ @ 17¾	11½ @ 14¾	11½ @ 15½	11¼ @ 15	13½ @ 15	13¾ @ 15¾	14¾ @ 17	16 @ 19¾	18¾ @ 21¼
	Upriver fine	18 @ 19½	17¼ @ 17½	17 @ 18	16½ @ 18	13½ @ 15½	13 @ 17½	15½ @ 17½	17 @ 19¼	17½ @ 21½	21 @ 23	22 @ 24½	23¾ @ 24¼
	Upriver coarse	13 @ 17	13¼ @ 14	11¼ @ 12	09 @ 10½	08¾ @ 09½	07 @ 09¼	07½ @ 09	08¾ @ 11½	09½ @ 11½	11¼ @ 12	12 @ 15	14 @ 15½

Review of the Crude Rubber Market

New York

DURING the last week of December the crude rubber market was naturally dull owing to inventory taking and the holiday season. First latex spot was 20¾ cents, ribbed smoked sheet the same and upriver fine Pará, 23 cents. The first week of the new year there was little activity. Several foreign factors decided to cut brokerage on sales between dealers. Until final agreement on a uniform rate for brokerage dealers declined to trade.

After several meetings the brokerage rate was established at $4 per ton. The brokerage rate on sales to factories remains at ¼-cent a pound. Late in the week prices stiffened, 19½ to 20 cents was asked for spot first latex crêpe. Parás were steady with more activity in wild rubbers than has been in evidence for some time previously. Balata was quiet.

The week ended January 14 began with little interest among dealers and factories. Some sales were made but business in large quantities did not materialize, and toward the close of the week prices eased off ½ to ¾ of a cent with little interest on the part of buyers. Parás were quiet and dull. Balata was very dull and neglected. There was some scattering interest in Pontianak and other grades.

Until the middle of the week ended January 21 the market held fairly steady when it turned weak on advices that London had sold large quantities in that market. This in combination with the report that several large western users were declining to purchase, decided the factories in general to hold off and resulted in settling prices still lower, and effectually eliminating buyers' interest and leaving prices very soft. This condition may or may not be of brief duration. On January 26 reports indicate a steady market with slight upward tendency. Sales to factories are being made at 16 cents for spot latex and ribs; June-December at 18 to 18½ cents.

Importations of all grades during December were 24,690 tons compared with 11,020 tons for December one year ago. Plantation arrivals for December were 23,596 tons compared with 9,716 tons for December one year ago. Total imports of all grades for twelve months ended December 31, 1921, were 187,368 tons compared with 221,080 tons for the corresponding period of 1920.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATIONS. January 3. Spot, first latex crêpe, 20-21 cents; January-March, 22 cents; April-June, 23 cents; July-December, 24¾ cents. January 23. Spot, first latex crêpe, 16½ cents; January-March, 16¾ cents; April-June, 18¼ cents; July-December, 19½ cents.

January 3. Spot, ribbed smoked sheets, 20-21 cents; January-March, 21-22 cents; April-June, 23 cents; July-December, 24¾ cents. January 23. Spot, ribbed smoked sheets, 16½ cents; January-March, 16¾ cents; April-June, 18 cents; July-December, 19½ cents.

January 3. Spot, No. 1 amber crêpe, 19 cents; January-March, 20 cents. January 23. Spot, No. 1 amber crêpe, 16 cents; January-March, 16¾ cents.

January 3. Spot, No. 1 rolled brown crêpe, 17½ cents; January-March, 18½ cents. January 23. Spot, No. 1 rolled brown crêpe, 15 cents; January-March, 15¼ cents.

SOUTH AMERICAN PARÁS AND CAUCHO. January 3. Spot, upriver fine, 23 cents; islands fine, 21 cents; upriver coarse, 15 cents; islands coarse, 10½ cents; Cametá, 10½ cents; caucho ball, 13½-14 cents. January 23. Spot, upriver fine, 20-21 cents; islands fine, 19 cents; upriver coarse, 13 cents; islands coarse, 10 cents; Cametá, 10 cents; caucho ball, 12-13 cents.

New York Quotations

Following are the New York spot quotations, for one year and one month ago, and January 23, the current date:

	February 1, 1921	January 1, 1922	January 23, 1922
Plantation Hevea			
First latex crêpe	$0.20 @	$0.20½ @	$0.16½ @
Off latex crêpe	@	.20½ @	.16 @
Amber crêpe No. 1	.17 @	.19½ @	.16 @
Amber crêpe No. 2	.16 @	.19 @	.15½ @
Amber crêpe No. 3	.15 @	.18½ @	.15¼ @
Brown crêpe, thick and thin	.15 @	.18½ @	.15¼ @
Brown crêpe, specky	.13 @	.18 @	.15½ @
Brown crêpe, rolled	.13 @	.18 @	.15 @
Smoked sheet, ribbed	.19¼ @	.20½ @	.16½ @
Smoked sheet, plain	.18½ @	.19¼ @	.15½ @
Unsmoked sheet	.17½ @	.19 @	.15 @
Colombo scrap No. 1	.15 @	.16¾ @	@
Colombo scrap No. 2	.14 @	.15¼ @	@
East Indian			
Assam crêpe	@	@	@
Assam onions	@	@	@
Penang block scrap	*.08 @	@	@
Pontianak			
Banjermassin	.07 @.08	.08¼ @	.08½ @
Palembang	.09½ @	.09¾ @	.10¼ @
Pressed block	.12 @.13	.13 @	.13 @
Sarawak	.07 @	.07 @	.07 @
South American			
Parás			
Upriver, fine	.18½ @.19½	.22½ @.23	.20 @
Upriver, medium	.15 @.16	.20 @.21	.17½ @
Upriver, coarse	.13 @.14	.15 @	.13 @
Upriver, weak, fine	*.14 @	.21 @	.17 @
Islands, fine	*.17½ @.18	.21 @	.19 @
Islands, medium	.13 @	.20 @	.17 @
Islands, coarse	.11 @.11½	.11 @	.09½ @
Cametá	.11 @.11½	.11 @	.09½ @
Acre Bolivian, fine	.19 @.22	.23 @	.21 @
Madeira, fine	.21 @.22	.23½ @	.22 @
Beni Bolivian	@	.24 @	.21 @
Peruvian, fine	.17 @.17½	.21 @	.19 @
Tapajos, fine	.17 @.17½	.21 @	.19 @
Parás—Washed and Dried (Shipment from Brazil)			
Acre Bolivian fine (crêpe)	@	.33½ @	.32½ @
Upriver, fine	@	@	.32½ @
Xingu fine (crêpe)	@	.31½ @	.29½ @
Cametá (crêpe)	@	21½ @	.21 @
Caucho			
Upper caucho ball	.14 @.15	.14 @	.12 @
Lower caucho ball	.12½ @	.11¼ @.12¼	.11 @
Maniçobas			
Ceará negro heads	.12 @	.12 @	*.11 @
Ceará scrap	.07 @	.08 @	*.07 @
Maniçoba 30% guaranty	.10 @	.09 @	*.08½ @
Mangabeira thin sheet	.09 @	.15 @	*.14 @
Centrals			
Corinto scrap	.11 @.12	.14 @.15	.13 @
Ceutral scrap	.11 @.12	.14 @.15	.13 @
Central scrap and strip	.09 @.10	.13½ @.14½	.10 @
Central wet sheet	.04 @.05	.05½ @ 06½	.04 @
Esmeralda sausage	.11 @.12	.14½ @.15¼	.13 @
Guayule, 20% guaranty	*.20 @	@	@
Guayule washed and dried	*.28 @	.26 @	.26 @
Africans			
Benguela, No. 1, 28½%	@	.08 @.10	@
Benguela, No. 2, 32½%	@	08 @.10	*.07 @.08
Conakry niggers	@	@	@
Congo prime, black upper	.15 @	@	@
Congo prime, red upper	.12 @	@	@
Kassai, black	.15 @	.16 @	*.15 @.16
red	@	.12 @.13	*.11 @.12
Massai sheets and strings	@	@	@
Niger flake, prime	.17 @	.14 @	@
Rio Nunez ball	@	@	@
Rio Nunez sheets, strings	@	@	@
Gutta Percha			
Gutta Siak	.14 @.16	.18½ @	.17½ @.18¼
Red Macassar	2.25 @ 2.60	2.85 @	2.75 @ 3.00
Balata			
Block, Ciudad Bolivar	.57 @.58	.56 @	.55 @
Colombia	.36 @.37	.43 @	.43 @
Panama	.24 @.30	.40 @.45	.43 @
Surinam sheet	.67 @.68	.69 @	.68½ @
amber	.70 @.71	.71 @	.72 @

*Nominal.

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

December, 1921

	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24	26*	27	28	29	30	31
			PLANTATIONS																					
Sheet																								
Ribbed smoked	20¼	20¼	20⅜	30⅛	20½	20⅜	20¾	20¾	20⅝	20⅞	20⅝	20⅝	20¼	20⅛	20⅜	20⅜	20¼	20¼	....	20¼	20¾	20⅝	20¾	20¾
Crêpe																								
First latex	20¼	20	20⅛	20⅛	20¼	20⅛	20¾	20⅝	20⅝	20⅝	20⅛	20⅛	20⅛	19⅞	20⅛	20½	20¼	20¼	....	20¼	20½	20½	20½	20½
Off latex	19¼	19¼	19⅜	19½	19¼	19½	20	19¾	19¾	19¾	19¼	19¼	19	19¼	19¼	19½	19¼	19¼	....	19¾	19¾	19¾	19½	19½
No. 1 blanket	18½	18¼	18¾	19	18¾	19	19⅜	19¼	19⅜	19½	19⅛	19⅛	18⅞	18¾	18¼	18⅜	18⅛	18⅛	....	19	19	19¼	19⅞	19⅞
No. 2 blanket	18	18¼	18½	18½	18¼	18⅝	19¼	18¾	19	19	18¾	18¾	18⅜	18⅜	18¼	18¼	18¼	18¼	....	18½	18⅝	18⅞	19⅛	19⅛
No. 3 blanket	17½	17¾	17¾	18	17¾	18⅛	18¾	18¼	18⅝	18⅝	18¼	18¼	17⅞	18	17¾	17¾	17¾	17¾	....	18	18¼	18⅜	18⅞	18⅞
Thin, clean, brown	18	17¾	17½	18½	18⅛	18¾	18¾	18¾	18⅞	18¾	18⅛	18½	18½	17¾	17¾	18	18⅛	18¼	....	18	18¼	18¾	19½	19½
Specky brown	17	17½	17	17½	17¼	18	18	17¾	18	18¼	17¾	17¾	17¼	17¼	17	17	17¼	17¼	....	17½	17¾	17¾	18¾	18¾
Rolled brown	17½	17½	17½	17¾	17¾	18¼	18¼	18¼	18¼	18¼	18⅛	18⅛	17⅝	17½	17½	17½	17⅜	17⅜	....	17¾	17¾	18	18¼	18¼

*Holiday.

Comparative Low and High New York Spot Rubber Prices

	January					
	1922		1921		1920	
Plantations						
First latex crêpe	$0.17	@$0.21	$0.19	@$0.21¾	$0.53	@$0.55¼
Smoked sheet, ribbed	.17	@ .21¼	.18	@ .20½	.53	@ .55
Parás						
Upriver, fine	.20¼	@ .23	.18	@ .19½	.49½	@ .50
Upriver, coarse	.13	@ .15	.13	@ .17	.35½	@ .37
Islands, fine	.18½	@ .21	.17	@ .18	.46	@ .48
Islands, coarse	.09	@ .11	.11¼	@ .14	.22½	@ .24
Cametá	.08	@ .11½	.10½	@ .12	.23¼	@ .24

*Figured to January 26, 1922.

Amsterdam Rubber Market

JOOSTEN & IANSSEN, Amsterdam, report under date of January 6, 1922:

The first week of the new year has been disappointing, with a very dull tone, constantly declining prices, and only now and then business of any importance, especially in the terminal market. Standard sheets are scarce. The demand has materially decreased and was far less general. The close is at the lowest, about as follows:

Hevea crêpe, Fl. .57.	Sheets, Fl. .58½	spot.
Hevea crêpe, Fl. .57½.	Sheets, Fl. .59	January to March.
Hevea crêpe, Fl. .60½.	Sheets, Fl. .62	April to June.
Hevea crêpe, Fl. .63.	Sheets, Fl. .64½	July to September.

Singapore Rubber Market

GUTHRIE & CO., Limited, Singapore, reported under date of December 8, 1921:

The move towards higher values continues, subject to fluctuations due to local profit-taking. A spasmodic entry of the trade in the first few days of the month caused prices to soar to 42 cents, but the enquiry was short-lived and a sharp reaction occurred. The tone at the opening of the weekly auctions yesterday was weak, but improved as the sale progressed. Standard sheet was not in good demand, and only a few lots sold at the quoted figure of 39½ cents. Good F. A. Q. sheet was in strong request from 38 to 39½ cents. Off quality sheet improved 1½ cents. Pale crêpes were in better favor at 2 to 3 cents up on the week. Lower grade crêpes were again in strong request and record a further advance of 2 to 3 cents. Of 853 tons catalogued, 684 tons were sold. The following is the course of values:

	In Singapore per pound		Sterling Equivalent per Pound in London	
	39½		1/0¾	
Sheet, fine ribbed smoked	38	@ 39½	1/ 0¾ @	1/ 0¾
Sheet, good F. A. Q.	32	@ 37½	—/10¾ @	1/ 0¾
Sheet, off quality		39½	1/1¾	
Crêpe, fine pale	37	@ 39	1/ 0½ @	1/ 1
Crêpe, good pale	33	@ 36½	—/11¼ @	1/ 0⅜
Crêpe, off quality	34	@ 35½	—/11⅝ @	1/—
Crêpe, fine brown	28½	@ 33½	—/10⅛ @	—/11½
Crêpe, good brown	28	@ 33	—/10 @	—/11⅜
Crêpe, dark		27½	—/9¾	
Crêpe, bark				

Plantation Rubber Exports from Malaya

(These figures include the production of the Federated Malay States, but not of Ceylon.)

	January 1 to September 30, 1921			January 1 to December 8, 1921	
	Port				
	Singapore	Malacca	Penang	Swettenham	Totals
To United Kingdom, *pounds*	37,146,499	3,119,353	25,658,732	16,339,143	82,263,727
The Continent	8,855,510	1,739,485	253,366	169,292	11,017,653
Japan	33,976,131	.....	.....	37,575	34,013,706
Ceylon	44,627	.....	248,565	571,627	864,819
United States and Canada	129,402,118	376,840	3,613,333	.....	133,392,291
Australia	633,548	806	.....	.....	634,354
China (Hong Kong)	121,586	.....	.....	.....	121,586
Other countries	39,746	.....	800,233	.....	839,979
Totals, *pounds*	210,219,765	5,236,484	30,574,229	17,117,637	*263,148,115

*Not verified.

Compiled by Barlow & Co., Singapore.

Reclaimed Rubber

Business for January has not developed in the volume hoped for previous to the holiday season. In fact it has dropped back to about the conditions prevailing last October. This is largely attributable to the weakness shown in crude rubber prices. The recent drop in that material has caused hesitancy on the part of rubber goods manufacturers in the matter of placing commitments on reclaims for spring business. A few good orders for reclaim have been placed recently in the Middle West, although the reclaimers generally are in a state of suspense but hopeful of good spring business. Reclaiming plants are operating at about 30 to 40 per cent capacity.

New York Quotations

January 23, 1922

Prices subject to change without notice.

Standard Reclaims		
Floating	$0.12	@$0.13
Friction	.12	@ .13
Mechanical	.09	@ .11
Shoe	.10½	@ .11
Tires, auto	.09½	@ .10
truck	.09	@ .11
White	.13	@ .14

Plantation Rubber Exports from Java*

	October		Ten Months Ended October 31	
	1920	1921	1920	1921
To Netherlands *kilos*	655,000	250,000	4,106,000	4,888,000
Great Britain	1,045,000	410,000	7,343,000	6,819,000
Germany	19,000	100,000	89,000	480,000
United States	625,000	1,772,000	10,786,000	9,265,000
Singapore	275,000	413,000	3,525,000	2,374,000
Japan	.....	.....	184,000	268,000
Australia	.....	.....	190,000	211,000
Other countries	98,000	76,000	165,000	161,000
Totals *kilos*	2,717,000	3,021,000	26,388,000	24,456,000
Ports of origin:				
Tandjong Priok *kilos*	1,149,000	1,189,000	12,113,000	10,684,000
Samarang	85,000	50,000	431,000	392,000
Soerabaja	1,469,000	1,482,000	13,001,000	11,353,000

*The September figures are verified.

Ceylon Rubber Exports

	January 1 to November 23	
	1920	1921
To United Kingdom *pounds*	40,681,463	26,629,377
Austria	.....	980
Belgium	169,550	254,384
France	709,913	515,020
Germany	661,341	3,834,175
Holland	26,329	374,281
Denmark	.....	51,610
Italy	230,720	104,160
Norway	2,240	2,240
Rest of "Europe"	.....	20
Western Australia	56	.....
Victoria	302,516	127,390
New South Wales	471,337	126,200
United States	35,451,286	46,373,797
Canada and Newfoundland	537,610	531,148
India	2,176	9,379
Straits Settlements	44,800	14
Japan	290,410	326,129
Mauritius	.....	40
Totals *pounds*	79,581,747	79,260,344

Compiled by the Ceylon Chamber of Commerce.

CRUDE RUBBER ARRIVALS AT ATLANTIC PORTS AS STATED BY SHIPS' MANIFESTS

Paras and Caucho at New York

	Fine	Medium	Coarse	Caucho	Totals Pounds
DECEMBER 21. By the S. S. "Boswell" from Manáos.					
Paul Bertuch	69,319	3,655	11,190	11,640	95,804
Fred Stern & Co.	111,895	.....	.....	.....	111,895
General Rubber Co.	112,000	.....	6,720	11,200	129,920
Schafer & Meyer	35,595	.....	28,829	11,240	75,664
Various	.....	.....	.....	.....	438,008
DECEMBER 21. By the S. S. "Boswell" from Pará.					
General Rubber Co.	112,000	.....	.....	.....	112,000
General Rubber Co.	.....	.....	.....	.....	†44,800
Paul Bertuch	12,739	2,530	.....	.....	15,269
H. A. Astlett & Co.	69,440	11,200	.....	56,000	136,440
Schafer & Meyer	34,631	.....	6,612	.....	41,243
Schafer & Meyer	6,172	.....	.....	.....	*6,172
DECEMBER 21. By the S. S. "Boswell" from Pará and Manáos.					
Poel & Kelly, Inc.	75,654	4,317	12,476	1,528	93,975
JANUARY 9. By the S. S. "Dennis" from Pará.					
General Rubber Co.	112,000	.....	4,480	.....	116,480
General Rubber Co.	.....	.....	.....	.....	†67,200
H. A. Astlett & Co.	22,400	.....	.....	.....	22,400
JANUARY 9. By the S. S. "Denis" from Manáos.					
General Rubber Co.	112,900	.....	15,680	.....	127,680
F. R. Henderson & Co., Inc.	.....	.....	.....	.....	4,800
Fred Stern & Co.	.....	.....	.....	.....	8,476
Meyer & Brown, Inc.	.....	.....	.....	.....	396
Raw Products Co.	.....	.....	.....	.....	47,329
Arkell & Douglas, Inc.	.....	.....	.....	.....	34,925
G. Amsinck & Co., Inc.	.....	.....	.....	.....	13,068
Paul Bertuch	.....	9,183	.....	.....	9,183
JANUARY 9. By the S. S. "Denis" from Pará and Manáos.					
Poel & Kelly, Inc.	200,700	854	32,500	118,336	352,390
Poel & Kelly, Inc.	.....	.....	.....	.....	†21,430
JANUARY 16. By the S. S. "Bronte" from Pará.					
General Rubber Co.	.....	.....	.....	.....	†44,800
H. A. Astlett & Co.	11,200	.....	33,600	22,400	67,200
JANUARY 16. By the S. S. "Bronte" from Manáos.					
Paul Bertuch	56,548	.....	.....	.....	56,548
JANUARY 30. By the S. S. "Glenaffric" from Pará.					
H. A. Astlett & Co.	22,400	.....	44,800	.....	67,200

*Washed and dried in Brazil.
†Cameta.

Plantations

(Figured at 180 pounds net to the bale or case.)

	Shipment from:	Shipped to:	Pounds	Totals
DECEMBER 5. By the S. S. "City of Canton," at New York.				
Baring Brothers	Malacca	New York	39,600	
Irwin-Harrisons Crosfield, Inc.	Malacca	New York	45,360	
Huth & Co.	Penang	New York	70,560	
Latham & Co.	Penang	New York	30,240	
Irwin-Harrisons Crosfield, Inc.	Penang	New York	70,560	
Edward Boustead & Co.	Penang	New York	104,400	
Various	Penang	New York	227,520	
Irwin-Harrisons Crosfield, Inc.	Teluk-Anson	New York	40,500	
Various	Pt.Swettenham	New York	310,500	
Firestone Tire & Rubber Co.	Singapore	Akron	45,000	
Pennsylvania Rubber Co.	Singapore	Jeanette	67,140	
Thornett & Fehr, Inc.	Singapore	New York	115,560	
Irwin-Harrisons Crosfield, Inc.	Singapore	New York	19,800	
East Asiatic Co., Inc.	Singapore	New York	95,400	
Habicht & Co.	Singapore	New York	251,280	
Phelan, Borland & Fearons	Singapore	New York	62,460	
Lee Tire & Rubber Co. of New York	Singapore	New York	43,200	
Nat E. Berzen	Singapore	New York	55,260	
Pell & Dumont, Inc.	Singapore	New York	77,400	
Eastern Rubber Co.	Singapore	Philadelphia	110,160	
Jaeger & Co.	Singapore	New York	52,380	
H. Muehlstein & Co.	Singapore	New York	75,060	
Ajax Rubber Co., Inc.	Singapore	New York	18,360	
American Trading Co.	Singapore	New York	39,960	
H. A. Astlett & Co.	Singapore	New York	170,000	
Baird Rubber & Trading Co., Inc.	Singapore	New York	190,400	
Various	Singapore	New York	216,926	2,644,986
DECEMBER 10. By the S. S. "West Calumb" at New York.				
Union Metal Products Co.	Belawan	New York	36,000	
H. Muehlstein & Co.	Belawan	New York	55,440	
Firestone Tire & Rubber Co.	Belawan	Akron	47,520	
Stein, Hall & Co., Inc.	Soerabaya	New York	26,640	
Raw Products Co.	Soerabaya	New York	48,780	
The Goodyear Tire & Rubber Co.	Soerabaya	Akron	851,760	
Jaeger & Co.	Colombo	New York	112,000	
Firestone Tire & Rubber Co.	Singapore	Akron	224,120	
Various	Singapore	New York	197,852	1,600,112
DECEMBER 12. By the S. S. "Truro City" at New York.				
*Various	Liverpool	New York	140,812	140,812
DECEMBER 12. By the S. S. "City of Benares" at New York.				
Huth & Co.	Colombo	New York	41,040	
H. A. Astlett & Co.	Colombo	New York	50,000	
Various	Colombo	New York	201,180	292,220
DECEMBER 12. By the S. S. "West Caddoa" at New York.				
The Goodyear Tire & Rubber Co.	Colombo	Akron	90,720	90,720
DECEMBER 13. By the S. S. "Port Lincoln" at New York.				
H. A. Astlett & Co.	London	New York	22,400	
Various	London	New York	564,200	586,600
DECEMBER 13. By the S. S. "Montauk" at New York.				
Various	London	New York	119,330	119,330
DECEMBER 16. By the S. S. "Kendal Castle" at New York.				
J. T. Johnstone & Co., Inc.	Malacca	New York	100,790	
Various	Malacca	New York	592,390	
Poel & Kelly, Inc.	Pt.Swettenham	New York	165,800	
Various	Pt.Swettenham	New York	663,311	
Schafer & Meyer	Far East	New York	56,000	
Charles T. Wilson Co., Inc.	Singapore	New York	63,840	
J. T. Johnstone & Co., Inc.	Singapore	New York	44,800	1,686,931
DECEMBER 16. By the S. S. "Knight Templar" at New York.				
General Rubber Co.	Colombo	New York	224,000	
F. R. Henderson & Co., Inc.	Penang	New York	80,640	
Various	Penang	New York	261,000	
Various	Teluk-Anson	New York	76,320	
Various	Pt.Swettenham	New York	339,300	
Various	Malacca	New York	212,940	
General Rubber Co.	Belawan-Deli	New York	793,300	
Various	Belawan-Deli	New York	688,682	
Various	Teluk-Nebong	New York	922,640	
Adolph Hirsch & Co., Inc.	Far East	New York	44,800	
Schafer & Meyer	Far East	New York	67,200	
Firestone Tire & Rubber Co.	Singapore	Akron	139,500	
Pennsylvania Rubber Co.	Singapore	Jeanette	67,140	
William Schall & Co.	Singapore	New York	59,760	
Poel & Kelly, Inc.	Singapore	New York	97,560	
The Goodyear Tire & ber Co.	Singapore	Akron	740,340	
J. T. Johnstone & Co., Inc.	Singapore	New York	35,840	
H. A. Astlett & Co.	Singapore	New York	112,000	
Baird Rubber & Trading Co., Inc.	Singapore	New York	459,200	
General Rubber Co.	Singapore	New York	627,200	
Charles T. Wilson Co., Inc.	Singapore	New York	346,080	
Meyer & Brown, Inc.	Singapore	New York	112,000	6,507,442
DECEMBER 16. By the S. S. 'Dardanus" at New York.				
L. Littlejohn & Co., Inc.	Java	New York	134,400	
East Asiatic Co., Inc.	Soerabaya	New York	36,485	
International Products Co.	Soerabaya	New York	22,273	
Various	Soerabaya	New York	35,270	
Fred Stern & Co.	Batavia	New York	88,951	
Various	Batavia	New York	137,253	454,632
DECEMBER 20. By the S. S. "Nagato Maru" at New York.				
F. R. Henderson & Co., Inc.	Colombo	New York	190,400	
L. Littlejohn & Co., Inc.	Colombo	New York	67,200	
Meyer & Brown, Inc.	Colombo	New York	302,400	
Jaeger & Co.	Colombo	New York	100,980	
Poel & Kelly, Inc.	Colombo	New York	77,680	
Hood Rubber Co.	London	Watertown	22,400	761,060
DECEMBER 20. By the S. S. "Montana" at New York.				
Baird Rubber & Trading Co., Inc.	London	New York	22,400	
Various	London	New York	189,640	212,040
DECEMBER 21. By the S. S. "Bondowoso" at New York.				
L. Littlejohn & Co., Inc.	Java	New York	134,400	
Various	Soerabaya	New York	360,736	
Various	Belawan-Deli	New York	181,440	
Fred Stern & Co.	Batavia	New York	67,158	
H. A. Astlett & Co.	Batavia	New York	40,722	
Various	Batavia	New York	4,078	
Schafer & Meyer	Far East	New York	11,324	795,780
DECEMBER 21. By the S. S. "Eurymachus" at New York.				
Firestone Tire & Rubber Co.	Singapore	Akron	179,280	
Continental Rubber Co. of New York	Singapore	New York	33,600	
Fred Stern & Co.	Singapore	New York	168,244	
L. Littlejohn & Co., Inc.	Singapore	New York	1,422,400	
Charles T. Wilson Co., Inc.	Singapore	New York	134,400	
Baird Rubber & Trading Co., Inc.	Singapore	New York	145,600	

Plantations—*Continued*

	Shipment from:	Shipped to:	Pounds	Totals
H. Muehlstein & Co.	Singapore	New York	126,000	
Baring Bros.	Singapore	New York	161,280	
Schafer & Meyer	Far East	New York	56,000	
F. R. Henderson & Co., Inc.	Singapore	New York	258,400	
F. R. Henderson & Co., Inc.	Medan	New York	15,687	
Various	Penang	New York	163,300	
Various	Pt.Swettenham	New York	31,320	
Various	Telok Anson	New York	11,160	
Various	Teluk Neboeng	New York	464,280	
General Rubber Co.	Belawan	New York	479,200	
Various	Belawan	New York	73,909	
Meyer & Brown, Inc.	Colombo	New York	224,000	
Poel & Kelly, Inc.	Colombo	New York	678,000	
Various	Colombo	New York	128,800	4,954,861
DECEMBER 21. By the S. S. "Menominee" at New York.				
L. Littlejohn & Co., Inc.	London	New York	112,402	
Various	London	New York	181,178	293,580
DECEMBER 23. By the S. S. "Ryndam," at New York.				
L. Littlejohn & Co., Inc..	Rotterdam	New York	280,000	
Poel & Kelly, Inc.	Rotterdam	New York	215,000	
Meyer & Brown, Inc.	Rotterdam	New York	56,000	
Charles T. Wilson Co., Inc.	Amsterdam	New York	22,400	573,400
DECEMBER 25. By the S. S. "Vasconia," at New York.				
L. Littlejohn & Co., Inc..	London	New York	1,388,800	
Fred Stern & Co.	London	New York	112,306	
East Asiatic Co., Inc.	London	New York	326,974	1,828,080
DECEMBER 26. By the S. S. "Duquesne," at New York.				
F. R. Henderson & Co., Inc.	Colombo	New York	184,400	
Various	Colombo	New York	215,660	
H. A. Astlett & Co.	Colombo	New York	22,400	
Charles T. Wilson Co., Inc.	Singapore	New York	78,400	
F. R. Henderson & Co., Inc.	Batavia	New York	70,375	
Continental Rubber Co., of New York.	Batavia	New York	20,160	
The Goodyear Tire & Rubber Co.	Batavia	Akron	162,900	
Various	Batavia	New York	328,685	
General Rubber Co.	Soerabaya	New York	48,060	
Jaeger & Co.	Soerabaya	New York	50,400	
Charles T. Wilson Co., Inc.	Soerabaya	New York	10,620	
Fred Stern & Co.	Soerabaya	New York	65,506	
Mitsui & Co., Limited.	Soerabaya	New York	55,800	
Poel & Kelly, Inc.	Singapore	New York	375,000	
Baring Bros.	Singapore	New York	44,640	
H. L. Laferre Lendie.	Singapore	New York	57,600	
L. Littlejohn & Co., Inc..	Singapore	New York	2,094,400	
Charles T. Wilson Co., Inc.	Singapore	New York	67,500	
F. R. Henderson & Co., Inc.	Singapore	New York	572,200	
Huth & Co.	Singapore	New York	45,000	
William H. Stiles & Co..	Singapore	New York	222,300	
Baird Rubber & Trading Co., Inc.	Singapore	New York	123,200	
Firestone Tire & Rubber Co.	Singapore	Akron	358,740	
Various	Singapore	New York	127,247	
Schafer & Meyer	Far East	New York	11,127	
Adolph Hirsch & Co., Inc.	Far East	New York	22,400	5,434,720
DECEMBER 27. By the S. S. "Creole State," at San Pedro.				
H. A. Astlett & Co.	Singapore	San Pedro	112,000	112,000
DECEMBER 28. By the S. S. "Nieuw Amsterdam," at New York.				
L. Littlejohn & Co., Inc.	Rotterdam	New York	459,200	
Baird Rubber & Trading Co., Inc.	Rotterdam	New York	44,800	
Meyer & Brown, Inc.	Rotterdam	New York	56,000	
Various	Rotterdam	New York	93,072	
Fred Stern & Co.	Amsterdam	New York	145,948	799,020
DECEMBER 29. By the S. S. "Union City," at New York.				
Poel & Kelly, Inc.	London	New York	219,000	219,000
DECEMBER 29. By the S. S. "Mesaba," at New York.				
Michelin Tire Co.	London	Milltown	56,700	
Various.	London	New York	73,620	130,320
DECEMBER 31. By the S. S. "Vendelia," at New York.				
Aldens' Successors, Inc..	London	New York	98,820	
Baird Rubber & Trading Co., Inc.	London	New York	33,600	
L. Littlejohn & Co., Inc..	London	New York	414,000	
Various	London	New York	234,420	780,840
JANUARY 1. By the S. S. "Gaelic Prince," at New York.				
Eastern Rubber Co.	Medan	Philadelphia	89,100	
Thornett & Fehr, Inc.	Medan	New York	236,340	
Fred Waterhouse Co.	Medan	New York	35,280	
Poel & Kelly, Inc.	Medan	New York	18,000	
F. R. Henderson & Co., Inc.	Medan	New York	39,300	
Various	Medan	New York	221,700	
Baring Brothers	Malacca	New York	117,000	
A. Range & Co.	Penang	New York	43,200	
F. R. Henderson & Co., Inc.	Penang	New York	131,200	
Edward Boustead & Co..	Penang	New York	48,600	
Various	Penang	New York	426,440	
Poel & Kelly, Inc.	Singapore	New York	757,400	
Firestone Tire & Rubber Co.	Singapore	Akron	387,900	
Pennsylvania Rubber Co.	Singapore	Jeannette	134,280	
F. R. Henderson & Co., Inc.	Singapore	New York	231,960	
L. Littlejohn & Co., Inc..	Singapore	New York	2,279,200	
Pell & Dumont, Inc.	Singapore	New York	90,000	
East Asiatic Co., Inc.	Singapore	New York	28,800	
John D. Lewis.	Singapore	New York	84,240	
General Rubber Co.	Singapore	New York	414,400	
Thornett & Fehr, Inc.	Singapore	New York	194,580	
Ajax Rubber Co., Inc.	Singapore	New York	8,280	
Charles T. Wilson Co., Inc.	Singapore	New York	351,680	
Phelan, Borland & Fearons	Singapore	New York	89,820	
Raw Products Co.	Singapore	New York	97,560	
Baring Brothers.	Singapore	New York	48,060	
Goschen & Cumliffe.	Singapore	New York	151,200	
William H. Stiles & Co..	Singapore	New York	19,800	
W. G. Ryckman, Inc.	Singapore	New York	100,800	
Peninsular Trading Agency, Inc.	Singapore	New York	100,800	
Fred Stern & Co.	Singapore	New York	486,328	
Baird Rubber & Trading Co., Inc.	Singapore	New York	459,200	
H. Muehlstein & Co.	Singapore	New York	324,000	
H. A. Astlett & Co.	Singapore	New York	173,600	
Various	Singapore	New York	189,582	
Schafer & Meyer	Far East	New York	33,530	8,642,160
JANUARY 2. By the S. S. "City of Melbourne," at Boston.				
Hood Rubber Co.	Ceylon	Watertown	151,300	
Charles T. Wilson Co., Inc.	Colombo	New York	11,880	163,180
JANUARY 2. By the S. S. "City of Melbourne," at New York.				
W. R. Grace & Co.	Colombo	New York	12,600	
Meyer & Brown, Inc.	Colombo	New York	22,400	
Jaeger & Co.	Colombo	New York	28,800	
Whittall & Co. of Ceylon.	Colombo	New York	123,480	
L. Littlejohn & Co., Inc..	Colombo	New York	224,000	
Charles T. Wilson Co., Inc.	Colombo	New York	20,160	
Pacific Trading Corporation of America.	Colombo	New York	100,800	
Baird Rubber & Trading Co., Inc.	Colombo	New York	11,200	
F. R. Henderson & Co., Inc.	Colombo	New York	104,040	
H. A. Astlett & Co.	Colombo	New York	11,200	
Poel & Kelly, Inc.	Colombo	New York	44,800	
Continental Rubber Co. of New York.	Colombo	New York	5,880	
Various	Colombo	New York	167,800	893,960
JANUARY 2. By the S. S. "Karroo," at Boston.				
Hood Rubber Co.	London	Watertown	92,400	92,400
JANUARY 4. By the S. S. "Port Nicholson," at New York.				
Fred Stern & Co.	London	New York	189,875	
Poel & Kelly, Inc.	London	New York	262,800	
L. Littlejohn & Co., Inc..	London	New York	604,800	
Various	London	New York	424,096	
Schafer & Meyer	Far East	New York	33,489	1,515,060
JANUARY 5. By the S. S. "Nanking," at San Francisco.				
Fred Stern & Co.	Singapore	Denver, Colo.	56,000	56,000
JANUARY 5. By the S. S. "Honolulu Maru," at New York.				
Winter, Ross & Co.	Singapore	New York	21,600	
Baird Rubber & Trading Co., Inc.	Singapore	New York	33,600	
L. Littlejohn & Co., Inc..	Singapore	New York	257,600	
Poel & Kelly, Inc.	Singapore	New York	335,200	
Thornett & Fehr, Inc.	Singapore	New York	187,200	
Habicht & Co.	Singapore	New York	99,000	
Fred Sterns & Co.	Singapore	New York	168,212	
W. R. Grace & Co.	Singapore	New York	192,240	
Various	Singapore	New York	138,128	
Schafer & Meyer	Far East	New York	33,640	
Hood Rubber Co.	London	Watertown	56,000	1,488,780
JANUARY 5. By the S. S. "Karroo," at New York.				
Hood Rubber Co.	Ceylon	Watertown	125,360	
Charles T. Wilson Co., Inc.	Colombo	New York	86,040	
Meyer & Brown, Inc.	Colombo	New York	156,800	
Jaeger & Co.	Colombo	New York	71,280	
Antoine Chiris Co.	Colombo	New York	71,280	
W. R. Grace & Co.	Colombo	New York	22,500	
General Rubber Co.	Colombo	New York	336,000	
F. R. Henderson & Co., Inc.	Colombo	New York	76,160	
L. Littlejohn & Co., Inc..	Far East	New York	224,000	
Schafer & Meyer	Far East	New York	33,600	
H. A. Astlett & Co.	Singapore	New York	22,400	1,191,830

Plantations—*Continued*

	Shipment from:	Shipped to:	Pounds	Totals
JANUARY 7. By the S. S. "Crewe Hall," at New York.				
Various	Malacca	New York	148,500	
F. R. Henderson & Co., Inc.	Penang	New York	174,000	
Various	Penang	New York	696,480	
Various	Belawan-Deli	New York	340,540	
Various	Pt. Swet'nh'm	New York	186,033	
Pennsylvania Rubber Co.	Singapore	Jeanette	234,540	
Firestone Tire & Rubber Co.	Singapore	Akron	310,320	
Boston Insulated Wire & Cable Co.	Singapore	Dorchester	10,080	
Dunlop Tire & Rubber Co., Limited	Singapore	Toronto	72,000	
Huth & Co.	Singapore	New York	139,500	
Poel & Kelly, Inc.	Singapore	New York	452,300	
Fred Stern & Co.	Singapore	New York	271,641	
F. R. Henderson & Co., Inc.	Singapore	New York	95,100	
Mitsui & Co., Limited	Singapore	New York	33,840	
Baring Bros.	Singapore	New York	40,500	
H. S. Seferore	Singapore	New York	97,920	
General Rubber Co.	Singapore	New York	32,400	
Meyer & Brown, Inc.	Singapore	New York	705,600	
William H. Stiles & Co.	Singapore	New York	234,900	
C. B. Kaufman	Singapore	New York	41,400	
H. Muehlstein & Co.	Singapore	New York	184,500	
Baird Rubber & Trading Co., Inc.	Singapore	New York	380,800	
Charles T. Wilson Co., Inc.	Singapore	New York	163,520	
H. A. Astlett & Co.	Singapore	New York	302,400	
Jaeger & Co.	Singapore	New York	125,820	
Aldens' Successors, Inc.	Singapore	New York	150,300	
Thornett & Fehr, Inc.	Singapore	New York	94,500	
L. Littlejohn & Co., Inc.	Far East	New York	2,128,000	
F. R. Henderson & Co., Inc.	Sumatra	New York	33,526	7,910,960
JANUARY 7. By the S. S. "Crewe Hall," at Boston.				
Hood Rubber Co.	Far East	Watertown	141,160	141,160
Poel & Kelly, Inc.	Rotterdam	New York	261,000	
Various	Rotterdam	New York	537,240	
L. Littlejohn & Co., Inc.	Java	New York	336,000	
Joosten & Janssen	Holland	New York	33,600	1,167,840
JANUARY 10. By the S. S. "Maine," at New York.				
L. Littlejohn & Co., Inc.	London	New York	537,600	
General Rubber Co.	London	New York	224,000	
Meyer & Brown, Inc.	London	New York	44,800	806,400
JANUARY 15. By the S. S. "Lorenzo," at New York.				
Charles T. Wilson Co., Inc.	Colombo	New York	44,800	
General Rubber Co.	Colombo	New York	504,000	
F. R. Henderson & Co., Inc.	Colombo	New York	49,380	
Poel & Kelly, Inc.	Colombo	New York	169,200	
L. Littlejohn & Co., Inc.	Far East	New York	235,200	
H. A. Astlett & Co.	Singapore	New York	22,400	1,024,980
JANUARY 15. By the S. S. "Lorenzo," at Boston.				
Hood Rubber Co.	Ceylon	Watertown	70,260	70,260
JANUARY 16. By the S. S. "West Canon," at New York.				
J. T. Johnstone & Co., Inc.	Batavia	New York	66,207	
F. R. Henderson & Co., Inc.	Batavia	New York	73,500	
Baird Rubber & Trading Co., Inc.	Singapore	New York	257,600	
Fred Stern & Co.	Singapore	New York	238,938	
Poel & Kelly, Inc.	Singapore	New York	479,400	
Meyer & Brown, Inc.	Singapore	New York	112,000	
F. R. Henderson & Co., Inc.	Singapore	New York	65,900	
H. A. Astlett & Co.	Singapore	New York	123,200	
Charles T. Wilson Co., Inc.	Singapore	New York	232,960	
F. R. Henderson & Co., Inc.	Soerabaya	New York	27,160	
F. R. Henderson & Co., Inc.	Colombo	New York	58,240	
Hood Rubber Co.	London	Watertown	22,400	
Schafer & Meyer	Far East	New York	17,432	1,774,937
JANUARY 13. By the S. S. "Promus," at New York.				
L. Littlejohn & Co., Inc.	Far East	New York	606,000	606,000
JANUARY 15. By the S. S. "Noordam," at New York.				
L. Littlejohn & Co., Inc.	Rotterdam	New York	716,800	
Poel & Kelly, Inc.	Rotterdam	New York	336,300	1,053,100
JANUARY 18. By the S. S. "Media," at New York.				
Poel & Kelly, Inc.	.....	New York	395,400	395,400
JANUARY 19. By the S. S. "Tydeus," at New York.				
Meyer & Brown, Inc.	Medan	New York	369,600	
H. A. Astlett & Co., Inc.	Singapore	New York	11,200	
Charles T. Wilson Co., Inc.	Singapore	New York	241,920	622,720
JANUARY 19. By the S. S. "Valacia," at New York.				
Meyer & Brown, Inc.	London	New York	277,760	277,760
JANUARY 19. By the S. S. "Scythia," at New York.				
Meyer & Brown, Inc.	London	New York	56,000	56,000

Pontianak

DECEMBER 5. By the S. S. "City of Canton" at New York.				
Various	Singapore	New York	36,900	36,900
DECEMBER 16. By the S. S. "Kendal Castle" at New York.				
Various	Singapore	New York	4,800	4,800

	Shipment from:	Shipped to:	Pounds	Totals
DECEMBER 16. By the S. S. "Knight Templar" at New York.				
Various	Singapore	New York	116,400	116,400
DECEMBER 18. By the S. S. "Dardanus" at New York.				
Various	Batavia	New York	22,200	22,200
DECEMBER 21. By the S. S. "Bondowoso" at New York.				
Various	Tandjong	New York	39,000	39,000
DECEMBER 21. By the S. S. "Eurymachus" at New York.				
L. Littlejohn & Co., Inc.	Singapore	New York	45,000	
Various	Singapore	New York	130,800	175,800
JANUARY 1. By the S. S. "Gaelic Prince" at New York.				
E. Everett Carleton & Co.	Singapore	New York	3,000	
Fred Stern & Co.	Singapore	New York	4,586	
Various	Singapore	New York	151,114	158,700
JANUARY 5. By the S. S. "Honolulu Maru" at New York.				
Various	Singapore	New York	52,500	52,500

Centrals

DECEMBER 17. By the S. S. "Low" at New York.				
G. Amsinck & Co., Inc.	Bogatá	New York	4,180	4,180
DECEMBER 23. By the S. S. "Santa Tecla" at New York.				
American Trading Co.	P'rto Colombia	New York	450	450
DECEMBER 24. By the S. S. "Quillota" at New York.				
C. F. Hernandez Sons & Co.	Guayaquil	New York	2,550	
Everett, Heaney & Co.	Guayaquil	New York	1,800	4,350
JANUARY 2. By the S. S. "Alliança" at New York.				
A. M. Capen's Sons, Inc.	Cristobal	New York	3,900	3,900

Africans

DECEMBER 12. By the S. S. "Kroonland," at New York.				
Various	Antwerp	New York	37,030	37,030
DECEMBER 20. By the S. S. "Zeeland," at New York.				
Various	Antwerp	New York	218,615	218,615
DECEMBER 21. By the S. S. "Pioneer," at New York				
Various	Antwerp	New York	202,170	202,170
DECEMBER 25. By the S. S. "Eastern Sea," at New York.				
Various	Antwerp	New York	140,428	140,428
DECEMBER 29. By the S. S. "Union City," at New York.				
Poel & Kelly, Inc.	Liverpool	New York	39,760	39,760
JANUARY 4. By the S. S. "Finland," at New York.				
Various	Antwerp	New York	26,910	26,910
JANUARY 13. By the S. S. "Maine," at New York.				
Poel & Kelly, Inc.	Bordeaux	New York	88,944	88,944
JANUARY 16. By the S. S. "Firestone County," at New York.				
Poel & Kelly, Inc.	Bordeaux	New York	134,711	134,711

Gutta Percha

DECEMBER 26. By the S. S. "Celtic," at New York.				
Various	Liverpool	New York	2,100	2,100
DECEMBER 21. By the S. S. "Bondowoso, at New York.				
Various	Tandjong	New York	68,700	68,700
JANUARY 1. By the S. S. "Gaelic Prince," at New York.				
Various	Singapore	New York	60,000	60,000

Gutta Siak

DECEMBER 16. By the S. S. "Kendal Castle," at New York.				
Various	Singapore	New York	60,000	60,000
DECEMBER 16. By the S. S. "Knight Templar," at New York.				
Various	Singapore	New York	70,200	70,200
DECEMBER 21. By the S. S. "Bondowoso," at New York.				
Various	Tandjong	New York	23,100	23,100

Balata

DECEMBER 14. By the S. S. "Elmac," at New York.				
Middleton & Co., Ltd.	Cayenne	New York	3,190	
William Schall & Co.	Paramaribo	New York	11,850	
Keys Bros.	Paramaribo	London	3,600	18,640
DECEMBER 18. By the S. S. "Carpfos," at New York.				
G. Amsinck & Co., Inc.	Cartagena	New York	750	750
DECEMBER 21. By the S. S. "Boswell," at New York.				
Various	Pará	New York	9,240	9,240
DECEMBER 21. By the S. S. "Fort St. George," at New York.				
Ultramares Corporation	C. Bolivar	New York	22,587	22,587
DECEMBER 27. By the S. S. "Prince de Nederlander," at New York.				
William Schall & Co.	Paramaribo	New York	11,550	11,550
DECEMBER 29. By the S. S. "Tivives," at New York.				
Eggers & Heinlein	Cartagena	New York	240	240
JANUARY 4. By the S. S. "Lake Savus," at New York.				
Middleton & Co., Ltd.	Cayenne	New York	2,634	
Middleton & Co., Ltd.	St. Laurent	New York	5,661	
Middleton & Co., Ltd.	Surinam	New York	18,681	26,976
JANUARY 9. By the S. S. "Denis," at New York.				
Various	Manáos	New York	11,532	11,532
JANUARY 11. By the S. S. "Mayaro," at New York.				
G. Amsinck & Co., Inc.	Trinidad	New York	24,035	
Ultramares Corporation	Trinidad	New York	11,288	
Boos & Co.	Trinidad	New York	11,730	47,053

CUSTOM HOUSE STATISTICS

New York

Imports

	November 1920 Pounds	November 1920 Value	November 1921 Pounds	November 1921 Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	.....	.....	615,687	$58,929
France	.....	.....	89,113	2,530
Netherlands	421,744	$107,974	4,549,385	707,708
Portugal	29,303	4,184	19,905	1,991
England	95,034	28,491	8,428,576	1,258,810
Honduras	728	250	.....	.....
Nicaragua	.....	.....	3,372	679
Panama	57	25	7,500	900
Argentina	.....	.....	10,470	1,404
Brazil	2,822,447	877,013	1,651,762	226,933
Colombia	4,892	2,828	21,314	7,211
Ecuador	4,335	869	.....	.....
Peru	124,065	33,126	.....	.....
Uruguay	18,386	17,624	.....	.....
Venezuela	40,607	11,368	.....	.....
British India	56,000	14,487	53,310	12,540
Straits Settlements	19,977,531	7,577,201	26,929,994	4,271,640
British East Indies	4,408,974	1,223,399	2,943,470	359,900
Dutch East Indies	4,594,424	1,683,499	5,336,917	666,099
Japan	.....	.....	328,468	37,363
Siam	68,460	19,542	.....	.....
Totals	32,666,987	$11,601,880	50,939,243	$7,614,637
Balata	118,945	70,609	222,127	127,411
Jelutong (Pontianak)	353,032	40,785	330,927	29,609
Gutta percha	528,222	128,952	111,208	17,080
Totals	33,667,186	$11,842,226	51,653,505	$7,788,737
Rubber scrap and reclaimed	332,485	21,819	258,305	14,750
Totals, unmanufactured	33,999,671	$11,864,045	51,911,810	$7,803,487
Manufactures of rubber and gutta percha ...*dutiable*	.....	$47,557	.....	$80,227
Chicle ...*dutiable*	38,149	16,946	274,484	141,462
Rubber substitutes...*dutiable*	.....	.....	1,188	214

Exports

MANUFACTURED				
Automobile and other tires	.....	$3,108,987	.....	$1,325,734
Inner tubes	.....	429,161	.....	94,108
Belting, hose, and packing	.....	593,640	.....	127,665
Rubber boots and shoes...*pairs*	851,621	926,505	103,418	92,679
Soles and heels	.....	98,860	.....	31,396
Druggists' sundries	.....	138,065	.....	33,783
Other rubber manufactures	.....	603,424	.....	191,137
Totals, manufactured	.....	$5,898,642	.....	$1,896,502
Insulated wire	.....	$932,397	.....	$385,597
UNMANUFACTURED—*free*				
Rubber scrap and reclaimed	540,922	$49,880	654,335	$47,272

Foreign Exports

Crude rubber	304,091	$92,021	104,281	$18,312
Balata	61,532	24,665	340,197	205,367
Rubber manufactures	.....	1,885	.....	569
Rubber substitutes	.....	.....	20,482	3,217

Massachusetts

Imports

UNMANUFACTURED—*free*				
Crude rubber				
From Straits Settlements	4,600	$1,445	295,270	$32,889
British East Indies	100,800	20,876	168,260	17,061
England	.....	.....	22,437	2,756
Totals, unmanufactured	105,400	$22,321	485,967	$52,706
Rubber manufactures...*dutiable*	.....	$3,736	.....	$7,489

Exports

MANUFACTURED				
Automobile and other tires	.....	$1,766	.....	$203
Inner tubes	.....	187	.....	20
Belting, hose, and packing	.....	4,020	.....	1,297
Rubber boots and shoes...*pairs*	49,960	47,556	5,036	4,660
Soles and heels	.....	4,762	.....	12,027
Druggists' sundries	.....	6,637	.....	52
Other rubber manufactures	.....	16,301	.....	41,853
Totals, manufactured	.....	$81,229	.....	$60,586
Insulated wire	.....	$22,938	.....	$945
Rubber scrap and reclaimed	.....	.....	1,051	368

Buffalo

Imports

UNMANUFACTURED—*free*				
Crude rubber				
From Canada	3,094	$1,468	.....	.....
Totals	3,094	$1,468	.....	.....
Rubber scrap and reclaimed	.....	.....	45,760	$529
Totals, unmanufactured	3,094	$1,468	45,760	$529
Rubber manufactures...*dutiable*	.....	$6,144	.....	$70,504

	November 1920 Pounds	November 1920 Value	November 1921 Pounds	November 1921 Value

Exports

MANUFACTURED				
Automobile and other tires	.....	$138,178	.....	$6,104
Inner tubes	.....	12,791	.....	151
Belting, hose, and packing	.....	10,142	.....	5,844
Rubber boots and shoes...*pairs*	951	4,016	836	1,039
Soles and heels	.....	133	.....	241
Druggists' sundries	.....	8,805	.....	8,103
Other rubber manufactures	.....	101,199	.....	37,548
Totals, manufactured	.....	$275,264	.....	$59,030
Insulated wire	.....	$7,651	.....	$3,652
Rubber scrap and reclaimed	42,984	7,151	162,116	14,372

Foreign Exports

Crude rubber	251,569	$46,791	902,002	$148,787
Rubber manufactures	.....	.....	.....	180

Philadelphia

Imports

Rubber manufactures	.....	.....	.....	$105

Exports

MANUFACTURED				
Automobile and other tires	.....	$1,192	.....	.....
Belting, hose, and packing	.....	37,128	.....	$5,872
Other rubber manufactures	.....	7,219	.....	.....
Totals, manufactured	.....	$45,539	.....	$5,872
Insulated wire	.....	$23,436	.....	$123
Rubber scrap and reclaimed	148,982	6,682	.....	.....

New Orleans

Imports

Rubber manufactures...*dutiable*	.....	$142	.....	.....

Exports

MANUFACTURED				
Automobile and other tires	.....	$20,557	.....	$2,223
Inner tubes	.....	3,296	.....	618
Belting, hose, and packing	.....	9,120	.....	5,843
Rubber boots and shoes...*pairs*	21,392	25,933	4,942	5,321
Soles and heels	.....	10,457	.....	825
Druggists' sundries	.....	818	.....	524
Other rubber manufactures	.....	2,383	.....	245
Totals, manufactured	.....	$72,564	.....	$15,599
Insulated wire	.....	$3,559	.....	$5,329

San Francisco

Imports

UNMANUFACTURED—*free*				
Crude rubber				
From Straits Settlements	.....	.....	254,860	$33,937
Totals, unmanufactured	.....	.....	254,860	$33,937
Rubber manufactures...*dutiable*	.....	.....	.....	$927

Exports

MANUFACTURED				
Automobile and other tires	.....	$184,623	.....	$37,276
Inner tubes	.....	19,519	.....	3,129
Belting, hose, and packing	.....	155,921	.....	15,192
Rubber boots and shoes...*pairs*	2,277	3,702	4,773	4,467
Soles and heels	.....	527	.....	53
Druggists' sundries	.....	3,094	.....	2,275
Other rubber manufactures	.....	6,877	.....	2,539
Totals, manufactured	.....	$374,263	.....	$64,931
Insulated wire	.....	$4,649	.....	$2,557
Rubber scrap and reclaimed	50	1	.....	.....

Washington

Imports

UNMANUFACTURED—*free*				
Crude rubber				
From Dutch East Indies	.....	.....	1,114	$1,381
Totals, unmanufactured	.....	.....	1,114	$1,381
Rubber manufactures...*dutiable*	.....	.....	.....	$21

Exports

MANUFACTURED				
Automobile and other tires	.....	$41,484	.....	$11,766
Inner tubes	.....	3,678	.....	903
Belting, hose, and packing	.....	4,818	.....	1,031
Rubber boots and shoes...*pairs*	800	2,247	129	563
Druggists' sundries	.....	377	.....	755
Other rubber manufactures	.....	1,253	.....	4,600
Totals, manufactured	.....	$53,857	.....	$19,618
Insulated wire	.....	$1,017	.....	$1,372
Rubber scrap and reclaimed	.....	.....	107,658	2,518

EXPORTS OF INDIA RUBBER MANUFACTURES AND INSULATED WIRE AND CABLE FROM THE UNITED STATES BY COUNTRIES DURING THE MONTH OF NOVEMBER, 1921

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Soles and Heels Value	Automobile Tires: Casings Value	Automobile Tires: Inner Tubes Value	Automobile Tires: Solid Tires Value	Automobile Tires: All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wire and Cables Value
EUROPE																
Austria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$664	$664	.....
Azores, etc., Islands	.....	$10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....
Belgium	.....	.....	$649	.....	.....	864	$713	.....	$535	$39	.....	.....	$754	1,055	3,745	$39
Denmark	.....	7,786	164	24	$91	2,300	3,455	.....	23,399	1,295	.....	$549	214	2,188	34,141	.....
Finland	$1,316	.....	14	.....	.....	.....	.....	.....	426	674	$457	.....	.....	516	3,403	.....
France	105	263	49	.....	.....	106	147	.....	13,445	495	.....	.....	3,053	60,012	77,569	5,826
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	754	754	.....
Greece	.....	.....	.....	.....	.....	.....	.....	$90	37,420	4,063	.....	32	.....	22	41,677	.....
Iceland, etc., Is.	.....	.....	.....	.....	.....	922	860	.....	.....	.....	.....	.....	.....	.....	860	.....
Italy	.....	.....	.....	78	249	24	68	.....	.....	.....	.....	.....	.....	6,221	6,538	751
Jugoslavia	.....	.....	.....	.....	.....	.....	.....	.....	1,490	373	.....	.....	.....	.....	1,863	.....
Malta, etc., Is.	.....	.....	.....	.....	.....	.....	.....	.....	3,469	.....	.....	.....	.....	.....	3,469	.....
Netherlands	877	250	.....	.....	.....	1,392	1,359	175	16,623	955	203	.....	734	371	21,547	.....
Norway	.....	237	121	.....	.....	3,198	3,239	854	6,566	828	1,300	.....	.....	2,046	15,191	135
Poland and Danzig	.....	.....	.....	.....	.....	1,039	520	.....	.....	.....	.....	.....	.....	50	570	.....
Portugal	.....	.....	.....	.....	.....	.....	.....	102	4,598	28	.....	.....	174	.....	4,902	.....
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	13	.....
Spain	.....	.....	.....	.....	.....	9,034	7,607	707	15,122	2,567	7,795	.....	.....	5,844	39,642	.....
Sweden	.....	.....	.....	145	507	9,038	3,087	.....	49,337	3,156	.....	.....	49	489	56,625	250,405
Switzerland	.....	.....	.....	.....	.....	2,470	2,724	.....	6,211	526	.....	113	.....	2,682	12,256	.....
Turkey in Europe	.....	.....	.....	.....	.....	.....	.....	.....	1,238	147	.....	.....	.....	181	1,566	150
England	1,703	9,161	4,911	2,478	4,207	12,614	7,384	405	648,739	47,966	13,414	.....	20,010	82,338	840,238	2,574
Scotland	.....	.....	190	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	699	889	278
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	700	80	.....	.....	.....	142	922	.....
TOTALS, EUROPE	$4,001	$12,707	$6,098	2,725	$5,054	43,001	$31,163	$2,333	$829,318	$63,192	$23,169	$694	$24,988	$166,337	$1,169,054	$260,158
NORTH AMERICA																
Bermuda	.....	$18	.....	30	$111	146	$159	$51	.....	$64	.....	$16	$118	$106	$643	$187
British Honduras	.....	50	$29	.....	.....	1,494	1,627	479	$300	185	.....	14	123	.....	2,807	72
Canada	$3,900	4,001	5,491	1,979	7,433	1,309	1,976	581	5,034	4,395	$5,950	228	24,649	104,318	167,956	8,199
Costa Rica	.....	.....	10	.....	.....	24	23	464	314	15	.....	30	107	30	993	2,373
Guatemala	188	.....	56	.....	.....	72	52	887	3,166	129	.....	.....	167	103	4,739	688
Honduras	524	894	210	.....	.....	1,987	2,400	226	1,348	60	837	14	183	810	7,506	1,925
Nicaragua	56	.....	90	.....	.....	580	583	48	.....	.....	.....	.....	7	115	899	944
Panama	.....	397	404	3	15	6,834	4,900	3,932	16,076	994	1,461	1,727	194	786	30,886	1,782
Salvador	.....	.....	40	.....	.....	.....	.....	6,085	3,273	369	.....	.....	123	97	9,987	1,600
Mexico	10,111	17,921	17,736	36	201	15,053	14,704	8,455	154,971	13,076	4,851	2,756	4,622	52,637	302,035	27,713
Miquelon, etc.	.....	.....	.....	84	224	.....	.....	.....	.....	.....	.....	.....	.....	.....	224	.....
Newfoundland	50	150	.....	432	1,319	1,252	1,026	226	.....	.....	.....	.....	16	671	3,458	235
Barbados	396	.....	274	.....	.....	.....	.....	.....	2,629	163	.....	97	.....	164	3,719	.....
Jamaica	130	204	28	.....	.....	4,582	5,012	77	14,781	1,419	2,848	.....	30	315	25,944	158
Trinidad and Tobago	408	58	23	.....	.....	1,121	1,067	100	7,195	419	248	44	.....	585	10,147	343
Other British West Indies	53	184	77	.....	.....	3,318	4,472	154	894	70	.....	141	.....	270	6,315	8,729
Cuba	63	4,938	1,971	24	85	387	499	3,770	55,968	3,238	2,891	1,708	1,415	8,415	84,961	17,507
Virgin Islands of United States	.....	.....	.....	.....	.....	1,291	1,876	209	910	22	2,000	421	.....	.....	5,438	.....
Dutch West Indies	.....	.....	52	.....	.....	528	392	185	1,192	165	.....	43	.....	141	2,170	114
French West Indies	193	.....	.....	.....	.....	.....	.....	.....	5,879	313	771	.....	.....	.....	7,156	.....
Haiti	.....	691	40	.....	.....	2,909	2,389	62	4,484	863	.....	203	260	312	6,855	16
Dominican Republic	102	1,572	171	.....	.....	.....	.....	.....	11,161	1,909	308	160	274	1,068	19,176	701
TOTALS, NORTH AMERICA	$16,174	$31,078	$26,698	2,588	$9,388	42,887	$43,157	$25,991	$289,575	$27,861	$23,165	$7,596	$32,288	$171,043	$764,014	$73,286
SOUTH AMERICA																
Argentina	$1,501	$3,732	$173	2	$11	2,550	$2,254	$526	$48,366	$1,800	$2,958	.....	$1,532	$2,269	$65,122	$1,990
Bolivia	2,193	.....	28	.....	.....	.....	.....	.....	990	.....	.....	.....	.....	.....	3,211	.....
Brazil	38	671	26	.....	.....	.....	.....	312	4,403	60	1,009	.....	.....	740	7,259	20,413
Chile	.....	4,062	103	.....	.....	.....	.....	.....	5,886	941	.....	$531	295	422	12,240	558
Colombia	857	1,112	183	.....	.....	564	609	2,776	7,239	452	.....	.....	129	1,297	14,654	3,772
Ecuador	.....	13,671	821	.....	.....	5,815	4,002	.....	5,856	506	.....	.....	.....	299	25,155	159
British Guiana	.....	.....	.....	.....	.....	48	66	.....	838	20	190	.....	.....	.....	1,114	100
Dutch Guiana	.....	.....	.....	.....	.....	282	353	120	.....	.....	.....	.....	.....	.....	473	.....
Paraguay	828	.....	.....	.....	.....	.....	.....	.....	96	3	.....	.....	.....	.....	927	.....
Peru	2,623	594	572	60	441	.....	.....	49	11,816	394	173	73	212	1,096	18,045	1,479
Uruguay	.....	42	.....	.....	.....	286	326	175	12,295	.....	.....	.....	.....	3,381	16,219	1,310
Venezuela	.....	155	.....	.....	.....	156	130	709	9,426	1,641	256	.....	34	575	12,926	3,798
TOTALS, SOUTH AMERICA	$8,040	$24,039	$1,906	62	$452	9,701	$7,740	$4,667	$107,211	$5,817	$4,586	$606	$2,202	$10,079	$177,345	$33,579
OCEANIA																
Australia	$443	$10	$1,709	.....	.....	.....	.....	$270	$11,266	$439	$4,683	.....	$742	$1,488	$21,050	$5,403
New Zealand	2,643	2,131	1,885	.....	.....	.....	.....	360	71,353	4,016	3,090	.....	726	3,226	89,430	16,880
Other British Oceania	.....	.....	.....	.....	.....	456	$407	.....	200	28	.....	$135	.....	.....	770	.....
French Oceania	90	10	65	.....	.....	1,941	2,087	39	1,333	189	836	249	.....	8	4,906	45
Other Oceania	.....	.....	.....	.....	.....	168	226	.....	105	.....	.....	73	.....	18	422	.....
Philippine Islands	186	705	313	.....	.....	7,296	6,142	1,909	47,153	3,350	4,596	4,905	274	9,978	79,511	3,639
TOTALS, OCEANIA	$3,362	$2,856	$3,972	.....	.....	9,861	$8,862	$2,578	$131,410	$8,022	$13,205	$5,362	$1,742	$14,718	$196,089	$25,967

ASIA																
China	....	$438	$69	....	....	75	$141	$11,955	$6,032	$668	$327	....	$171	$5,629	$25,430	$6,388
Chosen	....	....	....	....	....	....	....	....	....	....	....	....	20	....	20	....
Kwantung	....	....	....	....	....	....	....	....	106	....	....	....	....	....	106	....
British India	$3,714	72	129	....	....	312	426	....	3,625	2,943	11,271	$72	28	921	23,201	2,007
Straits Settlements	....	....	....	....	....	....	....	....	4,334	836	2,891	....	....	250	8,311	....
Other British East Indies	....	....	....	....	....	....	....	....	1,534	....	....	....	265	....	1,739	....
Dutch East Indies	....	....	....	....	....	....	....	....	1,200	....	2,100	....	....	....	3,300	....
French East Indies	....	....	....	....	....	....	....	....	196	....	....	....	....	....	196	....
Far Eastern Republic	....	....	....	....	....	420	105	....	....	....	....	....	....	....	105	....
Greece in Asia	....	....	....	....	....	....	....	....	3,146	120	137	....	....	....	3,403	....
Hejaz, etc.	....	....	....	....	....	....	....	....	1,876	....	....	....	....	....	1,876	....
Hongkong	....	310	....	....	....	2,998	2,742	....	658	....	....	....	....	1,423	5,133	569
Japan	....	1,335	785	1,944	$1,557	11,550	10,391	....	20,399	1,248	6,819	28	328	20,558	63,448	2,659
Palestine and Syria	....	....	....	....	....	....	....	693	9,909	1,725	....	1,200	....	488	14,015	....
Persia	....	....	....	....	....	....	....	....	1,048	....	....	....	....	....	1,048	....
Siam	506	72	....	....	....	....	....	....	466	....	73	....	....	194	1,311	....
Turkey in Asia	....	....	....	....	....	....	....	....	....	....	....	....	86	....	86	....
TOTALS, ASIA	$4,220	$2,227	$983	1,944	$1,557	15,355	$13,805	$12,648	$54,529	$7,540	$23,618	$1,300	$838	$29,463	$152,728	$11,623
AFRICA																
Belgian Congo	....	$158	....	....	....	....	....	....	....	....	....	....	....	....	$158	....
British West Africa	....	....	....	....	....	....	....	$54	$11,742	$960	....	....	....	$26	12,782	....
British South Africa	$17,045	18,249	$4,202	....	....	1,985	$1,675	1,179	37,268	1,577	$468	$50	$159	2,572	84,444	$6,751
British East Africa	....	....	....	....	....	....	....	....	4,548	442	....	....	....	....	4,990	....
French Africa	....	....	....	....	....	....	....	....	110	....	....	....	....	....	110	....
Morocco	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25
Liberia	....	....	....	....	....	....	....	....	....	....	....	....	....	75	75	....
Portuguese Africa	209	....	....	....	....	....	....	....	....	....	....	....	....	....	209	....
Canary Islands	....	....	....	....	....	....	....	....	1,933	....	....	....	....	162	2,095	....
Egypt	....	62	....	....	....	....	....	....	6,412	....	....	....	....	394	6,868	....
TOTALS, AFRICA	$17,254	$18,469	$4,202	....	....	1,985	$1,675	$1,233	$62,613	$2,979	$468	$50	$159	$3,229	$111,731	$6,776
GRAND TOTALS	$53,051	$91,376	$43,859	7,319	$16,451	122,790	$106,402	$49,450	$1,474,056	$115,411	$88,211	$15,608	$62,217	$394,869	$2,510,961	$411,389

Exports of Rubber Goods to Non-Contiguous Territory of the United States

	Belting, Hose and Packing Value	Boots and Shoes Pairs	Boots and Shoes Value	Tires Automobile Value	Tires All Others Value	Druggists' Rubber Sundries Value	All Other Manufactures of Rubber Value	Totals Value	Insulated Wires and Cables Value
Hawaii	$1,645	....	....	$97,979	$827	....	$12,238	$112,689	....
Porto Rico	2,433	....	....	63,274	4,926	....	38,900	109,533	....
TOTALS	$4,078	....	....	$161,253	$5,753	....	$51,138	$222,222	....

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

OFFICIAL INDIA RUBBER STATISTICS FOR THE UNITED STATES

Imports of Crude and Manufactured Rubber

	November 1920 Pounds	November 1920 Value	November 1921 Pounds	November 1921 Value
UNMANUFACTURED—*free*				
India rubber				
From France	....	....	89,113	$2,530
Netherlands	421,744	$107,974	4,549,385	707,708
Portugal	29,303	4,184	19,905	1,991
United Kingdom	95,034	28,491	8,451,013	1,261,566
Canada	3,094	1,468	....	....
Central America	785	275	10,872	1,579
Mexico	55,000	11,000	....	....
Brazil	2,822,447	877,013	1,651,762	226,933
Peru	124,065	33,126	....	....
Other South America	68,220	32,689	31,784	8,615
British East Indies	24,547,905	8,837,408	30,645,164	4,727,967
Dutch East Indies	4,718,969	1,734,951	5,338,031	667,480
Other countries	68,450	19,549	944,155	96,292
Totals	32,955,016	$11,688,128	51,731,184	$7,702,661
Balata	118,945	70,609	222,127	127,411
Guayule	125,000	25,000	....	....
Jelutong (Pontianak)	353,032	40,785	330,927	29,609
Gutta percha	528,222	128,952	111,208	17,080
Rubber scrap	369,355	23,844	459,224	19,456
Totals, unmanufactured	34,449,570	$11,977,318	52,854,670	$7,896,217
Chicle .... *dutiable*	447,207	$292,704	403,563	$189,212
MANUFACTURED—*dutiable*				
India rubber and gutta percha	....	$65,366	....	$172,591
India rubber substitutes	....	....	1,188	214

Exports of Domestic Merchandise

	1920 Pounds	1920 Value	1921 Pounds	1921 Value
MANUFACTURED				
India rubber				
Scrap and old	791,364	$50,723	880,702	$52,443
Reclaimed	189,711	32,091	274,709	30,179
Belting[1]	....	441,028	....	53,051
Hose[1]	....	347,134	....	91,376
Packing[1]	....	146,626	....	43,859
Boots[1]	21,345	70,683	7,319	16,451
Shoes[1]	918,900	965,492	122,790	106,402
Soles and heels[1]	....	116,057	....	49,450
Tires				
Casings[1]	....	3,443,128	....	1,474,056
Inner tubes[1]	....	511,147	....	115,411
Solid tires[1]	....	286,266	....	88,211
All other tires[1]	....	78,592	....	15,608
Druggists' rubber sundries[1]	....	174,304	....	62,217
Other rubber manufactures[1]	....	845,481	....	394,869
Suspenders and garters	....	317,952	....	51,098
Totals, manufactured	....	$7,826,704	....	$2,644,681
Fountain pens ......*number*	33,870	$44,253	3,248	$3,525
Insulated wire and cables	....	1,033,898	....	411,389

Exports of Foreign Merchandise

	1920 Pounds	1920 Value	1921 Pounds	1921 Value
UNMANUFACTURED				
India rubber	560,198	$139,608	1,041,940	$172,313
Balata	61,532	24,665	340,197	205,367
Totals, unmanufactured	621,730	$164,273	1,382,137	$377,680
MANUFACTURED				
Gutta percha and india rubber	....	$1,885	....	$846
India rubber substitutes	....	....	20,483	3,217
Totals, manufactured	....	$1,885	....	$4,063

Exports of Rubber Goods to Non-Contiguous Territories of the United States

	1920 Pounds	1920 Value	1921 Pounds	1921 Value
MANUFACTURED				
To Alaska				
Belting, hose, and packing	....	$9,137	....	....
Boots and shoes.... *pairs*	2,802	6,765	84	$131
Other rubber goods	....	2,710	....	....
Totals	....	$18,612	....	$131
To Hawaii				
Belting, hose, and packing	....	$27,613	....	$1,645
Automobile tires	....	107,866	....	97,979
Other tires	....	1,390	....	827
Other rubber goods	....	21,593	....	12,238
Totals	....	$158,462	....	$112,689
To Porto Rico				
Belting, hose, and packing	....	$13,385	....	$2,433
Automobile tires	....	166,757	....	63,274
Other tires	....	1,988	....	4,926
Other rubber goods	....	74,015	....	38,900
Totals	....	$256,145	....	$109,533

[1]Details of exports of domestic merchandise by countries during November, 1921, appear on this and the preceding page.

Imports of Crude Rubber Into the United States by Customs Districts

CUSTOMS DISTRICTS	December, 1921 Pounds	Value
Massachusetts	743,100	$85,316
Buffalo	325	83
New York	56,352,069	8,097,598
Los Angeles	1,333,166	156,752
San Francisco	216,161	30,595
Totals	58,644,821	$8,370,344

RUBBER STATISTICS FOR THE DOMINION OF CANADA

Imports of Crude and Manufactured Rubber

	October 1920 Pounds	Value	1921 Pounds	Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	44,064	$15,518	55,870	$7,300
United States	614,012	160,898	1,418,013	219,612
Brazil	.....	.....	106,314	20,000
British East Indies				
Straits Settlements	946,660	466,262	369,563	63,096
France	.....	.....	110	112
Total	1,604,736	$642,678	1,949,870	$310,120
Rubber, recovered	229,782	43,166	99,962	9,413
Rubber, powdered, and rubber or gutta percha scrap	347,004	21,916	76,749	5,234
Rubber substitutes	107,433	12,281	24,406	6,483
Totals, unmanufactured	2,288,955	$720,041	2,150,987	$331,250
PARTLY MANUFACTURED				
Hard rubber sheets and rods	3,911	$2,749	271	$342
Hard rubber tubes	.....	7,732	.....	3,933
Rubber thread, not covered	5,280	5,242	9,880	10,657
Totals, partly manufactured	9,191	$15,723	10,151	$14,932
MANUFACTURED				
Belting	.....	$16,600	.....	$2,917
Hose	.....	15,184	.....	10,862
Packing	.....	7,279	.....	4,093
Boots and shoes	.....	30,105	.....	14,306
Clothing, including waterproofed	.....	8,653	.....	10,536
Gloves	.....	1,560	.....	1,142
Hot-water bottles	.....	2,838	.....	640
Tires, solid	.....	10,349	.....	17,592
Tires, pneumatic	.....	240,362	.....	31,904
Inner tubes	.....	28,052	.....	6,820
Elastic, round or flat	.....	43,594	.....	30,435
Mats and matting	.....	255	.....	650
Cement	.....	4,801	.....	2,978
Other rubber manufactures	.....	127,796	.....	83,406
Totals, manufactured	.....	$537,428	.....	$218,281
Totals, rubber imports	2,298,146	$1,273,192	2,161,138	$564,463
Insulated wire and cables				
Wire and cables covered with cotton, linen, silk, rubber, etc	.....	$14,936	.....	$6,025
Copper wire and cables, covered as above	.....	43,944	.....	8,746
Chicle	47,575	23,363	68,326	29,069
Fillets	.....	802	.....	1,087
Webbing	.....	44,633	.....	35,725
Fountain pens	.....	4,407	.....	2,638

Exports of Domestic and Foreign Rubber Goods

	October 1920 Produce of Canada Value	Reexports of Foreign Goods Value	1921 Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$3,856	.....	$3,954	.....
MANUFACTURED				
Belting	$8,330	.....	$6,255	.....
Hose	20,458	.....	18,243	.....
Boots and shoes	93,830	.....	62,490	.....
Clothing, including waterproofed	1,952	$832	92	$80
Tires, pneumatic	862,067	.....	191,318	.....
Tires	2,689	135	12,372	625
Other manufactures	84,111	2,516	12,131	2,255
Totals, manufactured	$1,073,437	$3,483	$302,901	$2,960
Totals, rubber exports	$1,077,293	$3,483	$306,855	$2,960

UNITED KINGDOM RUBBER STATISTICS

Imports

	November 1920 Pounds	Value	1921 Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	6,730,300	£454,284	1,502,400	£61,700
Federated Malay States	7,098,000	471,713	3,666,400	165,131
British India	758,700	48,839	454,100	20,824
Ceylon and dependencies	4,574,500	286,140	1,819,400	80,118
Other Dutch possessions in Indian Seas	1,025,600	65,534	588,600	23,278
Dutch East Indies (except other Dutch possessions in Indian Seas)	2,569,600	171,605	994,200	43,432
Other countries in East Indies and Pacific, not elsewhere specified	327,300	22,869	89,500	4,055
Brazil	1,169,300	77,498	232,800	13,705
Peru	19,600	1,223	.....	.....
South and Central America (except Brazil and Peru)	1,900	100	.....	.....
West Africa:				
French West Africa	.....	.....	500	23
Gold Coast	8,800	151	100	4
Other parts of West Africa	23,600	1,464	900	47
East Africa, including Madagascar	118,800	6,517	22,000	850
Other countries	83,400	6,561	30,600	1,423
Totals	24,509,400	£1,614,496	9,401,500	£414,590
Waste and reclaimed rubber	432,700	7,625	63,300	695
Gutta percha and balata	665,000	132,871	1,125,800	202,652
Rubber substitutes	1,700	115	28,400	653
Totals unmanufactured	25,608,800	£1,755,107	10,619,000	£618,590
MANUFACTURED				
Boots and shoes...*doz. pairs*	11,314	£31,069	3,396	£12,276
Waterproof clothing	.....	424	.....	1,652
Insulated wire	.....	3,731	.....	6,780
Tires and tubes	.....	422,281	.....	474,763
Other rubber manufactures	.....	71,326	.....	56,585
Totals, manufactured	.....	£528,825	.....	£552,056

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	1,783,800	£49,779	561,900	£8,010
Rubber substitutes	108,000	3,809	71,600	1,752
Totals, unmanufactured	1,891,800	£53,588	633,500	£9,762
MANUFACTURED				
Boots and shoes...*doz. pairs*	21,722	£41,672	10,555	£22,892
Waterproof clothing	.....	208,750	.....	82,930
Insulated wire	.....	200,220	.....	45,693
Submarine cables	.....	81,609	.....	42,028
Tires and tubes	.....	481,936	.....	154,353
Other rubber manufactures	.....	403,989	.....	207,489
Totals, manufactured	.....	£1,418,176	.....	£555,385

Exports—Colonial and Foreign

UNMANUFACTURED				
Crude rubber				
To Russia	37,700	£4,215	.....	.....
Sweden, Norway and Denmark	293,400	25,120	72,300	£2,311
Germany	1,927,300	110,432	1,133,000	41,516
Belgium	213,600	14,897	423,100	16,308
France	649,200	45,215	2,024,000	80,312
Spain	77,000	6,101	62,000	3,279
Italy	101,800	8,213	283,800	12,133
Austria-Hungary	9,600	665	.....	.....
Other European countries	407,200	27,893	306,500	11,481
United States	66,500	7,255	6,867,500	252,169
Canada	350,500	33,196	48,300	1,990
Other countries	112,300	12,865	18,000	1,270
Totals	4,245,500	£296,067	11,238,500	£422,769
Waste and reclaimed rubber	17,100	925	15,400	501
Gutta percha and balata	25,800	6,715	38,500	7,37.
Rubber substitutes	.....	.....	11,100	365
Totals, unmanufactured	4,288,400	£303,707	11,303,500	£431,010
MANUFACTURED				
Boots and shoes...*doz. pairs*	1,582	£7,722	749	£2,277
Waterproof clothing	.....	.....	.....	7
Insulated wire	.....	29	.....	40
Tires and tubes	.....	63,011	.....	48,623
Other rubber manufactures	.....	4,378	.....	2,938
Totals, manufactured	.....	£75,140	.....	£53,885

THE MARKET FOR RUBBER SCRAP

New York

The lessened volume of rubber scrap sales coincident with the holiday season has continued to intensify from week to week since then. With the opening of the new year reclaimers had dropped out of the market for scrap and their return is likely to be somewhat further delayed. Meantime, scrap buying has been confined mostly to dealers purchasing to cover old orders. With this accomplished, trade has come to a virtual standstill with prices firm at very low levels.

Boots and shoes have been steady all the month at from $3.50 to $3.75 a 100 pounds.

Mixed tire scrap has advanced slowly from 50 cents, just previous to January 1, to 75 cents to $1.00 a 100 pounds.

No. 1 inner tubes were quoted at $4.50 to $4.75 per 100 pounds. No. 2 inner tubes are quoted at $3.75. Mechanicals are of no value and quotations are merely nominal.

Quotations for Carload Lots Delivered

January 23, 1922

Prices subject to change without notice

Boots and Shoes			
Boots and shoes	lb.	$0.03½ @	.03¾
Trimmed arctics	lb.	.02¾ @	
Untrimmed arctics	lb.	.02¼ @	
Hard Rubber			
Battery jars, black compound	lb.	*.07½ @	
No. 1, bright fracture	lb.	*.12 @	.15
Inner Tubes			
No. 1	lb.	.04¼ @	
Compounded	lb.	.03¾ @	
Red	lb.	.03½ @	
Mechanicals			
Black scrap, mixed, No. 1	lb.	*.02¼ @	.03
No. 2	lb.	*.01½ @	.02
Heels	lb.	*.02½ @	.03
Horse-shoe pads	lb.	*.02½ @	.03
Hose, air brake	lb.	*.01 @	.01½
fire, cotton lined	lb.	*.01 @	
garden	lb.	.07 @	
Matting	lb.	*.01 @	
Red packing	lb.	*.04½ @	.05
Red scrap, No. 1	lb.	*.07 @	.08
No. 2	lb.	*.05½ @	.06
White scrap, No. 1	lb.	*.07 @	.07½
No. 2	lb.	.06 @	.06½
Tires			
Pneumatic—			
Auto peelings	lb.	.01½ @	
Bicycle	lb.	.01 @	.01¼
Standard white auto	lb	*.02¼ @	.02¾
Mixed auto	lb.	.00¾ @	.01
Stripped, unguaranteed	lb	*.01 @	.01½
White, G. & G., M. & W., and U. S.	lb.	*.02¾ @	
Solid—			
Carriage	lb.	*.02½ @	.02¾
Iron	lb.	@	
Truck, clean	lb.	*.01½ @	.02

*Nominal.

THE MARKET FOR COTTON AND OTHER FABRICS

New York

AMERICAN COTTON. Spot middling during the past month has suffered a net decline of about 75 points from 19.50. The level of 17.75 cents was reached in a series of a half-dozen sharp drops alternating with recoveries of lesser amount. December 31, 19.45 cents was reached with immediate reaction next day of 80 points downward. A similar drop totaling 65 points, covering a period of two days, January 10 to 12, brought the market down from 18.85 to 18.20 cents. January 24 and 25 the market was steady and quiet at 17.75 cents.

The year's start is reported to be disappointing. Supplies are still ample. The statistical position continues to improve. The visible supply is placed at 4,204,000 bales, with probably about 5,000,000 bales remaining to be brought into sight.

EGYPTIAN COTTON. Upper Egyptian cotton was considerably stronger during the early part of last month, but weakened on the news from Washington that the agricultural interests had asked for a duty on all cotton with a staple of 1⅛ inches or longer. The United States is a large user of upper Egyptians, and the prospect of an import duty was sufficient to considerably depress the Alexandria future market. Some business which was done on the break failed materially to improve the market. Medium-grade uppers are being offered freely today, January 23, at from 27½ to 29 cents c. i. f. Boston for prompt shipment. Sakellarides declined in sympathy with uppers, and medium grades are selling at 32 cents to 35 cents ex duty, with prime Sakellarides for first-grade thread work offered in a moderate way at 45 cents. There has been little or no business in the medium grades during the past month.

SEA ISLAND COTTON is unchanged at 44 cents for average extra choice. A small business has been done, and offerings are very limited.

ARIZONA COTTON. Pima has recently improved considerably in price as the result of considerable business, particularly in the medium grades. No. 3 is offered now at 36 cents net weights landed East. Various ones of the larger rubber interests are credited with a considerable amount of buying.

MECHANICAL DUCKS AND DRILLS. The market for these fabrics is very dull, but the outlook is promising for increase of activity. A sharp demand is expected from manufacturers through the next three months with consequent higher prices. Following this spring demand quiet markets will probably prevail.

RAINCOAT CLOTHS. The prices for raincoat cloths remain unchanged from last month. There are inquiries for small lots of goods for spot delivery, but outside of that practically nothing is being done.

SHEETINGS. There has been some buying of sheetings at slight concessions within the past week or two, but nothing beyond 60 days' delivery. What little call there is relates entirely to spot goods. Immediate marked improvement is not anticipated.

TIRE FABRICS. While improved market conditions for tire fabrics were expected with the opening of the new year, these expectations have not yet been realized. The demand for nearby shipments of fabric is no better than it has been for the past 60 days. It is reported that there exists a wide range between the lowest and the highest prices quoted for tire fabric, which upsets the buyers as much as it does the sellers. Reports from Washington indicate that inevitably a duty will be placed on imported raw cotton. As Egypt supplies a large quantity of cotton for tire fabric the proposed tariff will affect ultimately the prices of fabric.

New York Quotations

January 23, 1922

Prices subject to change without notice

Burlaps		
36—8-ounce	$3.85	@$3.90
40—7-ounce	3.80	@ 3.85
40—7½-ounce	4.05	@ 4.10
40—8-ounce	4.10	@ 4.15
40—10-ounce	4.80	@ 4.85
40—10½-ounce	4.90	@ 4.95
Drills		
38-inch 2.00-yard per yard	.17½	@
40-inch 3.47-yard	.10¾	@
52-inch 1.90-yard	.19½	@
52 inch 1.95-yard	19½	@
60-inch 1.52-yard	.24½	@

Duck

Carriage Cloth

38-inch 2.00-yard enameling duck	yard	$0.17½	@
40-inch 1.47-yard		.23¼	@
72-inch 16.66-ounce		.39½	@
72-inch 17.21-ounce		.40¼	@

Mechanical

Hose	pound	$0.33	@
Belting		.33	@

Hollands, 40-inch

Acme	yard		@
Endurance			@
Penn			@

Dead Finish

Piece			@
Cut			@
Standard, 36-inch, white		.18	@
36-inch, colors		.18	@
42-inch, white		.22	@
42-inch, colors		.22	@

Flat Finish

Piece			@
Cut			@
Imperial, 36-inch, white		.14	@
36-inch, colors		.14	@
42-inch, white		.16	@
42-inch, colors		.16	@

Lonsdale

White, piece			@
cut			@
Colors, piece			@
cut			@
Green and blue, piece			@
cut			@

Nainsooks

White			@
Flesh			@

Raincoat Fabrics

Cotton

Bombazine 64 x 60	yard	$0.13	@
60 x 48		.11½	@
Cashmeres, cotton and wool, 36-inch, tan		.55	@
Twills 64 x 72		.10	@ .12
60 x 102		.14	@
Twill, mercerized, 36-inch, blue and black		.27½	@
tan and olive		.25	@
Tweed		.20	@ 1.00
printed		.15	@
Plaids 60 x 48		.12½	@
56 x 44		.11¼	@
Repp			@
Prints 60 x 48		.13	@
64 x 60		.14	@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.13¼	@
48 x 48, 2.85-yard		.11½	@
64 x 68, 3.15-yard		.12¾	@
56 x 60, 3.60-yard		.10¾	@
48 x 44, 3.75-yard		.09¾	@

Silks

Canton, 38-inch	yard	.30	@
Schappe, 36-inch		.45	@

Stockinettes

Single Thread

3½ Peeler, carded	pound		@
4½ Peeler, carded			@
6½ Peeler, combed			@

Double Thread

Zero Peeler, carded	pound		@
3½ Peeler, carded			@
6½ Peeler, combed			@

Tire Fabrics

Building

17¼-ounce Sakellarides, combed	pound	1.05	@
17¼-ounce Egyptian, combed		.85	@
17¼-ounce Egyptian, carded		.80	@
17¼-ounce Peelers, combed		.82	@
17¼-ounce Peelers, carded		.60	@

Cord

15-ounce Egyptian	pound	.90	@

Bicycle

8-ounce American	pound		@
10-ounce American			@

Chafer

9¼-ounce Sea Island	pound		@
9¼-ounce Egyptian, carded		.90	@
9¼-ounce Peeler, carded		.70	@

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS

New York

There is a slowly-developing increase of output in most lines of rubber goods manufacturing. Prices of compounding ingredients are firm at low levels. There have been no advances in price except in the case of benzol. In general the market has been dull. The outlook for active trading on the part of the rubber industry is slow of development, and though eventually due it may not materialize for several weeks to come.

ANILINE. Demand for aniline has been quiet during the entire month with quotations ranging between 17 to 19 cents a pound.

ANTIMONY SULPHIDES. The demand has been light and prices declining. Nothing has occurred to relieve the dullness of trade.

BARYTES. Early in the month there was an influx of imported barytes at prices with which domestic grades cannot compete in the East although it can do so in the West owing to prohibitive freight rates. About the middle of the month a reduction in price of domestic barytes was effected by elimination of the charge for barrels, and more interest was developed in the new price of $23.90 a ton.

BENZOL. Prices advanced about the first of the month for both 90 per cent and pure. There was a gain in production which is approaching normal and demand held strong.

BLANC FIXE. The situation closely approximates that for barytes. Demand is routine.

CADMIUM SULPHIDE. The market is inactive. Prices $1.50 to $1.85 a pound.

CARBON BISULPHIDE. During most of the month business has been routine with some improvement noted toward the close.

CARBON TETRACHLORIDE. During most of the month the demand has been quiet, later more interest developed. Prices ruled from 10½ to 12 cents a pound.

CHINA CLAY. Discrimination in favor of the imported article continues to rule owing to high railway freight rates on the domestic product. The call is fairly active.

DRY COLORS. Interest in dry colors is somewhat restricted, trade in most grades being classed as dull and prices steady.

GAS BLACK. The outlook was good for normal business by users of gas black. The rubber trade came in with fair demand.

LITHARGE. Business from the rubber trade showed gradual improvement from the first of the month onward. In this, as in other lines, rubber manufacturers are not tempted by low quotations to overstock in advance of contracts for their own products.

LITHOPONE. Occasional large importations of German lithopone are received consigned to specific consumers. Such importations do not further depress the price for domestic lithopone already at the low figure of 6 cents a pound in bags. There are indications of a busy season for domestic producers of lithopone.

SOLVENT NAPHTHA. The supply continues short with demand good.

SUBLIMED LEAD. The situation is essentially the same in the rubber trade as in the demand for litharge. A gradual improvement is in progress, with price steady.

SULPHUR. The market is steady with moderate call. Prices for commercial flour grade have remained unchanged at $1.45 to $2.10 a 100 pounds; 100 per cent. $2.30 to $2.90.

SULPHUR CHLORIDE. The supplies are large and business confined to routine requirements.

TALC. There has been a good seasonal demand for both French, Italian and domestic grades.

WHITING. There has been no surplus stock. Demand has been steady all the month.

ZINC OXIDE. The outlook is reported encouraging to the producers. Prices remain unchanged and business fair.

New York Quotations

January 23, 1922

Prices subject to change without notice

Accelerators, Organic

Accelerene (f. o. b. English port)	lb.	13s.	@	
Adeo	lb.	$0.75	@	
Aldehyde ammonia crystals	lb.	.90	@	.95
Aniline (f. o. b. factory)	lb.	.17	@	.19
Excellerex	lb.	.55	@	
Formaldehyde aniline	lb.	.45	@	.50
Hexamethylene tetramine	lb.	.72½	@	.75½
Lead oleate (factory)	lb.	12	@	
N. C. C.	lb.		@	
No. 999	lb.	.13¾	@	
Paradin	lb.	.39	@	
Paranitroso dimethylaniline	lb.		@	
Paraphenylene diamine	lb.	1.60	@	1.75
Thiocarbanilide	lb.	.40	@	
Vul Ko Cene	lb.	.35	@	
X L O	lb.	1.50	@	
Xantopone	lb.	1.00	@	

Accelerators, Inorganic

Lead, dry red	lb.	.08	@	.08¼
sublimed white	lb.	.06½	@	
white, basic carbonate	lb.	.06½	@	.07½
Lime, flour, superfine	lb.	.02	@	.02½
Litharge, domestic	lb.	*$0.08½	@	
imported	lb.	*.17	@	
Orange mineral	lb.	.11	@	.13
Magnesium, carbonate, light (bags)	lb.	.06	@	
calcined light (bbls.)	lb.	.25	@	
calcined extra light (bbls.)	lb.	.45	@	
calcined medium light (bbls.)	lb.	.20	@	
calcined heavy (bbls.)	lb.	.05½	@	.06

Acids

Acetic 28 per cent (bbls.)	cwt.	2.50	@	3.00
glacial, 99 per cent	cwt.	10.00	@	10.75
Cresylic (97% straw color, drums)	gal.	.50	@	.52
(95% dark, drums)	gal.	45	@	.47
Muriatic, 20 degrees	cwt.	1.40	@	1.75
Nitric, 36 degrees	cwt.	5.00	@	6.00
Sulphuric, 66 degrees	ton	16.00	@	17.00

Alkalies

Caustic soda, 76 per cent	cwt.	3.60	@	3.70
Soda ash, 58% (bbls.)	cwt.	2.00	@	2.10

Colors

Black

Bone, powdered	lb.	.05½	@	.07¼
Carbon black	lb.	.10½	@	.20
pressed	lb.	.13	@	
Dipped goods	lb.	1.00	@	
Drop	lb.	.07½	@	.16
Ivory black	lb.	.15	@	.45
Lampblack	lb.	.17	@	.45
Micronex	lb.	.12	@	.17
Oil soluble aniline	lb.	.90	@	
Rubber maker's black (non-flying)	lb.	.40	@	

Blue

Cobalt	lb.	.23	@	.30
Dipped goods	lb.	1.00	@	
Prussian	lb.	.50	@	
Rubber makers' blue	lb.	3.50	@	
Ultramarine	lb.	.14	@	.30

Brown

Iron oxide	lb.	.05	@	.16
Sienna, Italian, raw and burnt	lb.	.07	@	.12
Umber, Turkey, raw and burnt	lb.	.06	@	.10
Vandyke	lb.	.03¼	@	.07

Green

Chrome, light	lb.	.30	@	.32
medium	lb.	.35	@	.36
dark	lb.	.36	@	.45
commercial	lb.	.12	@	
tile	lb.	.11	@	13
Guignet	lb.	1.50	@	
Dipped goods	lb.	1.00	@	
Oxide of chromium	lb.	.50	@	.60
Rubber makers' green	lb.	3.50	@	

Red

Antimony, crimson	lb.	.43	@	
crimson, 15/17%, sulphur free	lb.	.38	@	.47
crimson, B. C. L., 15/17%	lb.	.37	@	
crimson, C. D. L., sulphur free	lb.	.45	@	
crimson, F	lb.	.35	@	
crimson, R. M. P.	lb.	.48	@	
Antimony, golden	lb.	.21	@	.27
golden, "Manhattan," 15/17%	lb.	.20	@	
golden, R. M. P.	lb.	.20	@	
golden 1	lb.	.30	@	
golden 2	lb.	.25	@	
golden, 15/17%, sulphur free	lb.	.21	@	
7-A	lb.	.35	@	
vermilion	lb.	.55	@	
red sulphuret	lb.	.20	@	
Arsenic, red sulphide	lb.	.12	@	
Cadmium, sulphide	lb.	1.85	@	
Dipped goods, red	lb.	1.00	@	
purple	lb.	1.00	@	
orange	lb.	1.00	@	
Indian	lb.	.08	@	.14
Indian maroon, English	lb.	.12½	@	
Iron oxide, reduced grades	lb.	.03	@	.13
pure bright	lb.	.14	@	
Maroon oxide	lb.	.08	@	.14
Red oxide, crimson	lb.	.05½	@	
English	lb.	.14	@	
Spanish	lb.	.04	@	
Oil soluble aniline, red	lb.	1.70	@	1.95
orange	lb.	1.45	@	
Oximony	lb.	.16	@	
Para toner	lb.	1.40	@	
Rubber makers' red (four shades)	lb.	3.50	@	
purple	lb.	2.50	@	
Spanish natural	lb.	.03½	@	.04½
Toluidine toner	lb.	2.50	@	2.75
Venetian	lb.	.02½	@	.05
Vermilion, American	lb.	.25	@	.30
English quicksilver	lb.	.87	@	.90

White

Albalith	lb.	.06	@	.06½
Aluminum bronze	lb.	.55	@	.60
Lithopone, domestic (factory)	lb.	.06	@	.06½

Colors—*Continued*

		C.L.	L.C.L.
Zinc oxide. American Horse Head (factory):			
Special	lb.	$0.08	@$0.08½
XX red	lb.	.07½@	.08
French process, Florence brand (factory):			
White seal	lb.	.11 @	.11¼
Green seal	lb.	.09¾@	.10¼
Red seal	lb.	.08¾@	.09¼
Azo (factory):			
ZZZ (lead free)	lb.	.07½@	.08
ZZ (under 5% leaded)	lb.	.07¼@	.07¾
Z (8-10% leaded)	lb.	.07 @	.07½
Yellow			
Arsenic, yellow sulphide	lb.	1.00 @	
Cadmium, sulphide, light	lb.	1.85 @	
Chrome, light and medium	lb.	.17 @	
Dipped goods	lb.	1.00 @	
Ochre, domestic	lb.	.03 @	
imported	lb.	.04 @	
Oil soluble aniline	lb.	1.55 @	
Rubber makers' yellow	lb.	3.50 @	

Compounding Ingredients

Aluminum flake (carloads)	ton	25.00	@29.45
hydrate, light	lb.	.20 @	.22
Ammonia carbonate	lb.	.11½@	.12¼
Asbestine	ton	20.00	@25.00
Barium, carbonate, precipitated	ton	75.00	@80.00
dust	ton	100.00 @	
Barytes, pure white (carloads)	ton	23.90 @	
off color (carloads)	ton	20.00 @	
uniform floated (carloads)	ton	23.90 @	
Basofor	lb.	.04½@	
Beta-naphthol	lb.	.29 @	
Blanc fixe	lb.	.04¼@	
Bone ash	lb.	@	
Carrara filler (factory)	ton	@	
Chalk, precipitated, extra light (f. o. b. factory)	lb.	.03½@	.04¼
heavy (f. o. b. factory)	lb.	.02½@	.03¼
China, clay, Dixie	ton	22.00	@32.00
Blue Ridge	ton	20.00	@32.00
Cotton linters, clean mill run	lb.	.04½@	
Fossil flour (powdered)	ton	60.00 @	
(bolted)	ton	60.00 @	
Glue, high grade	lb.	.30 @	.40
medium	lb.	.20 @	.26
low grade	lb.	.15 @	.18
Graphite, flake	lb.	.10 @	
amorphous	lb.	.05 @	
Infusorial earth (powdered)	ton	60.00 @	
(bolted)	ton	65.00 @	
Mica, powdered	lb.	*.15 @	
Pumice stone, powdered	lb.	.03 @	.05
Rotten stone, powdered (bbls.)	lb.	.02½@	.04½
Silica, aluminum	ton	30.00 @	
gold bond	ton	25.00 @	
silver bond	ton	20.00 @	
Soap bark, cut	lb.	.09 @	.10
Soapstone, powdered-gray (carloads)	ton	12.00 @	
Starch, powdered corn (bags)	cwt.	1.92 @	2.02
(bbls.)	cwt.	2.20 @	2.30
Talc, soapstone	ton	25.00 @	
Terra blanche	ton	25.00 @	
Tripoli flour, air-floated, cream or rose (factory)	ton	25.00	@30.00
white (factory)	ton	27.00	@32.00
Tyre-lith	ton	85.00	@90.00
Whiting, Alba	cwt.	15.00	@18.00
commercial (factory)	cwt.	1.05 @	1.15
Danish	ton	14.00 @	
English cliffstone (factory)	cwt.	1.60 @	1.75
gilders	cwt.	1.20 @	1.35
Paris, white, American (factory)	cwt.	1.25 @	1.35
Plymouth	ton	16.00	@18.00
Quaker	ton	13.00	@15.00
Wood pulp, XXX (f. o. b. factory)	ton	30.00 @	
X (f. o. b. factory)	ton	25.00 @	

Mineral Rubber

Gilsonite	ton	70.00 @	
Genasco (factory)	ton	50.00	@52.00
Hard hydrocarbon	ton	35.00	@38.00
Soft hydrocarbon	ton	33.00	@35.00
320/340 M. P. hydrocarbon	ton	47.50	@50.00
300/310 M. P. hydrocarbon	ton	42.50	@45.00
Pioneer, M. R. (factory) solid	ton	36.00	@54.00
Robertson, M. R. (factory)	ton	35.00	@75.00
Rubrax (factory)	ton	50.00 @	
States "A"	ton	40.00	@42.50
No. 1	ton	35.00	@37.50
Syntro, granulated, M. R. (factory)	ton	54.50	@64.50

Oils

Avoilas compound	lb.	.15 @	
Castor, No. 1, U. S. P.	lb.	.11½@	
No. 3, U. S. P.	lb.	.10½@	
Corn	lb.	.10 @	
Cotton	lb.	.10 @	
Glycerine (98 per cent)	lb.	.14½@	.15
Halowax (1,000 lb. steel drums, returnable)	gal.	.25 @	.27
Linseed, raw, domestic	gal.	.73 @	
Palm lagos	lb.	$0.09 @	
Palm, niger	lb.	.08 @	
Peanut	lb.	.11 @	
Petrolatum, standard	lb.	.06 @	.08
Petrolatum, sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	1.10 @	
Rapeseed, refined	lb.	.12½@	
blown	lb.	.14 @	
Rosin	gal.	.40 @	.45
Syntro	gal.	.38 @	.60
Soya bean	lb.	.09½@	
Tar	gal.	.26 @	.32

Resins and Pitches

Cumar resin, hard	lb.	.09 @	.12
soft	lb.	.09 @	.12
Tar, retort	bbl.	10.00 @	
kiln	bbl.	9.50	@10.00
Pitch, Burgundy	lb.	.05 @	
coal tar	lb.	.01½@	
pine tar	lb.	.03½@	
ponto	lb.	.08 @	
Rosin, K (bbl.)	280 lbs.	6.75 @	
strained (bbls.)	280 lbs.	6.00 @	
Shellac, fine orange	lb.	.80 @	

Solvents

Acetone (98.99 per cent drums [6.62 lbs. per gal.])	lb.	.12½@	.13½
Benzol (90%, drums [7.21 lbs. per gal.])	gal.	.27 @	.33
pure (drums)	gal.	.29 @	.38
Carbon bisulphide (drums [10.81 lbs. per gal.])	lb.	.07 @	
tetrachloride (drums [13.28 lbs. per gal.])	lb.	.12 @	
Paracymene (factory)	lb.	.15 @	
Motor gasoline (steel bbls.)	gal.	.26 @	
Naphtha, V. M. & P. (steel bbls.)	gal.	.25 @	
solvent (drums extra)	gal.	.26 @	
Toluol, pure (7.21 lbs. per gal.)	gal.	.30 @	.36
Turpentine, spirits	gal.	.93 @	
wood	gal.	.90 @	
Xylol, pure (7.21 lbs. per gal.)	gal.	.31 @	.38
commercial	gal.	.45 @	.51

Substitutes

Black	lb.	.07 @	.13½
Brown	lb.	.07 @	.14
White	lb.	.08¼@	.15¼
Brown factice	lb.	.08 @	.15
White factice	lb.	.09 @	.16½

Vulcanizing Ingredients

Lead, black hyposulphite (black hypo)	lb.	.30 @	.42
Sulphur chloride (jugs)	lb.	.20 @	
(drums)	lb.	.08 @	
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.55 @	2.90
(bags)	cwt.	2.30 @	2.65
Light 100% pure (bbls.)	240 lbs.	2.60 @	3.15
(bags)	150 lbs.	2.35 @	2.90
Superfine 99½% pure (bbls.)	210 lbs.	2.40 @	2.90
(bags)	cwt.	2.00 @	2.50

(See also Colors—Antimony).

Waxes

Wax, beeswax, white, commercial	lb.	.45 @	
ceresine, white	lb.	.12 @	
carnauba	lb.	.16 @	
Montan	lb.	.07 @	
ozokerite, black	lb.	.18 @	
green	lb.	.26 @	
paraffine	lb.	.25 @	
sweet wax	lb.	.10 @	.12

*Nominal.

GERMAN HARD RUBBER MOLDS

Hair Ornament

A line in which many German establishments are specializing to meet a steadily growing demand, is the manufacture of metal molds for making hair ornaments of hard rubber, celluloid, and other materials.

Some of the concerns maintain departments in which molds and dies are designed to suit customers' requirements, preliminary drawings being furnished gratis. Several firms have electrically equipped engraving departments for the manufacture of not only ornamental and ordinary comb-pressing molds, but also molds for forming dolls, toys, and other articles in hard rubber and celluloid. Compressed air is applied to the presses used for forming these various products.

The hair ornament shown in the accompanying illustration was made in molds constructed by G. R. Franz, Buchholz, Saxony.

SIPE CUSHIONING SOLID TRUCK TIRES

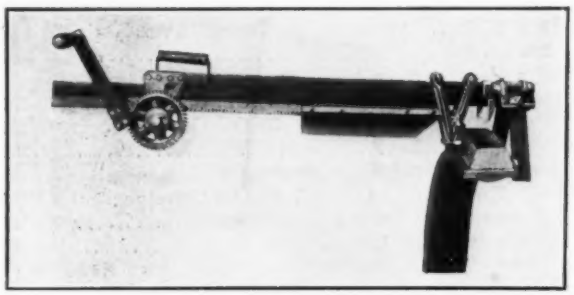
Solid rubber truck tires have certain points of superiority over pneumatic tires, such as smaller first cost, better mileage and freedom from disabling accidents. Solid tires are deficient in resiliency, liable to skid, and deteriorate by overheating. These are features for overcoming which the inventive skill of designers and engineers has long been exercised. The results are seen in numerous cushion tire forms, molded anti-skid treads, and the use of anti-skid tire chains.

While these devices are important, none of them eliminates completely the three difficulties cited.

Converting Solid to Cushion Tires

An unusually simple and effective patented method of treating an ordinary solid truck tire has been in use in New York and vicinity for some time. It is claimed that this process not only makes the tire easy-riding and non-skid but greatly increases its mileage.

The method referred to is known as "Sipe cushioning." It is applicable to the ordinary form of solid tire which it converts into a cushion tire by means of radial incisions on the tread of the tire at regular intervals to a uniform depth of about one



Sipe-Cushioning Tool

inch. The cuts are made by a geared hand-power knife shown in the illustration and no rubber is removed by the use of the tool.

Tire Cushioning Tool

The knife used in cushioning solid tires consists of a bar arranged with adjustable clamps by means of which it can be attached to the edges of the tire rim for support when in use. On the under side of this bar slides a rack carrying the cutting blade, seen in the illustration. This blade is advanced through the massive rubber of the tire by means of a geared mechanism operated by a hand-crank. Before the blade enters the rubber it is lubricated by passing between two oiled pads of felt.

Cuts can be made across the tire tread at any depth or spacing. In practice it has been found that cuts one inch in depth at intervals of 2 inches on front and 2½ inches on rear tires give satisfactory results on trucks of 2½-ton or more capacity. For trucks of less than 2½ tons capacity the cuts are spaced 1⅝ and 2 inches on front and rear tires respectively.

Effects of Cushioning

The Sipe method of cushioning claims marked improvements in solid tire service, which have been demonstrated in actual use The division of the tread of the tire into short blocks without the removal of any rubber stock results in the freedom of the rubber to flow in small units, independently of adjoining units. A wide range cushion is thus created, resulting in the truck riding with something of the softness of a touring car.

Anti-Skid Features

The block formation of the tread permits the tire to fit itself to the road and roll without slipping. This combination of

Sipe-Cushioned Solid Tire

cushioning and elimination of slippage greatly increases the life of the tire, it is said. By reason of the transverse movement of each block, in relation to adjoining blocks, there results a succession of shoulders to grip the road, due to each block being compressed ahead of the succeeding block. This constitutes the anti-skid feature.

The movement of the blocks transversely also eliminates the "traction wave" of rubber in advance of the tire, and by so doing obviates the internal heating which is a very serious cause of rapid deterioration and destruction in ordinary solid tires.

Cutting, chipping and other such injuries are less liable to occur, owing to the ability of the small tread sections to withdraw locally from blows encountered under service conditions.

THE CALIFORNIA PUNCTURE VINE

California motorists and bicyclists have a new anxiety. On many suburban roads, especially in the southern part of the state, air leaks and blowouts caused by the burrs of the puncture vine (*Tribulus terrestris*) are now quite common. Coming probably in ships' ballast from its habitat on the northern border of the Sahara Desert, Africa, the seeds finally found suitable soil and climate in California, being first recognized there in 1903. Now that the weed is causing trouble to tire users the State Horticultural Commission is considering means to exterminate it.

The vine has many prostrate stems filled with multiple-thorned burrs, often one-half inch long, and in falling the needle-pointed spikes always turn upward. The spike of the burr loses its head

Los Angeles Times

Vine Spreads Rapidly—Burrs ½-Inch Long

as it enters a weakened casing and soon works its way to the tube and damages the latter without warning.

ANILINE

This material was one of the earliest commercial vulcanization accelerators used. It is poisonous. Freshly prepared it is colorless, but discolors on exposure to light and air. It is a rubber solvent, softens rubber mixings, and prevents their burning on the mill.

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